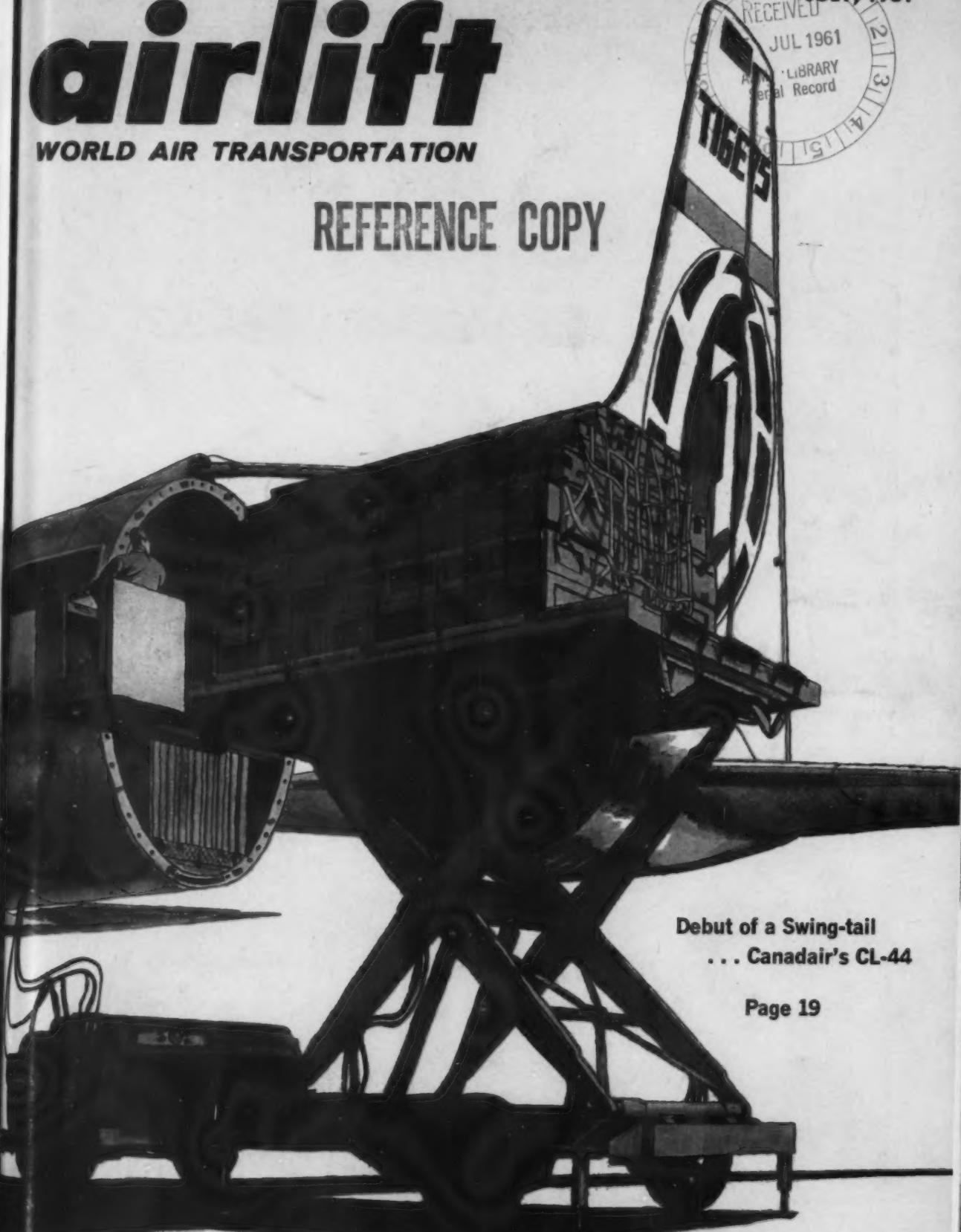


airlift

WORLD AIR TRANSPORTATION

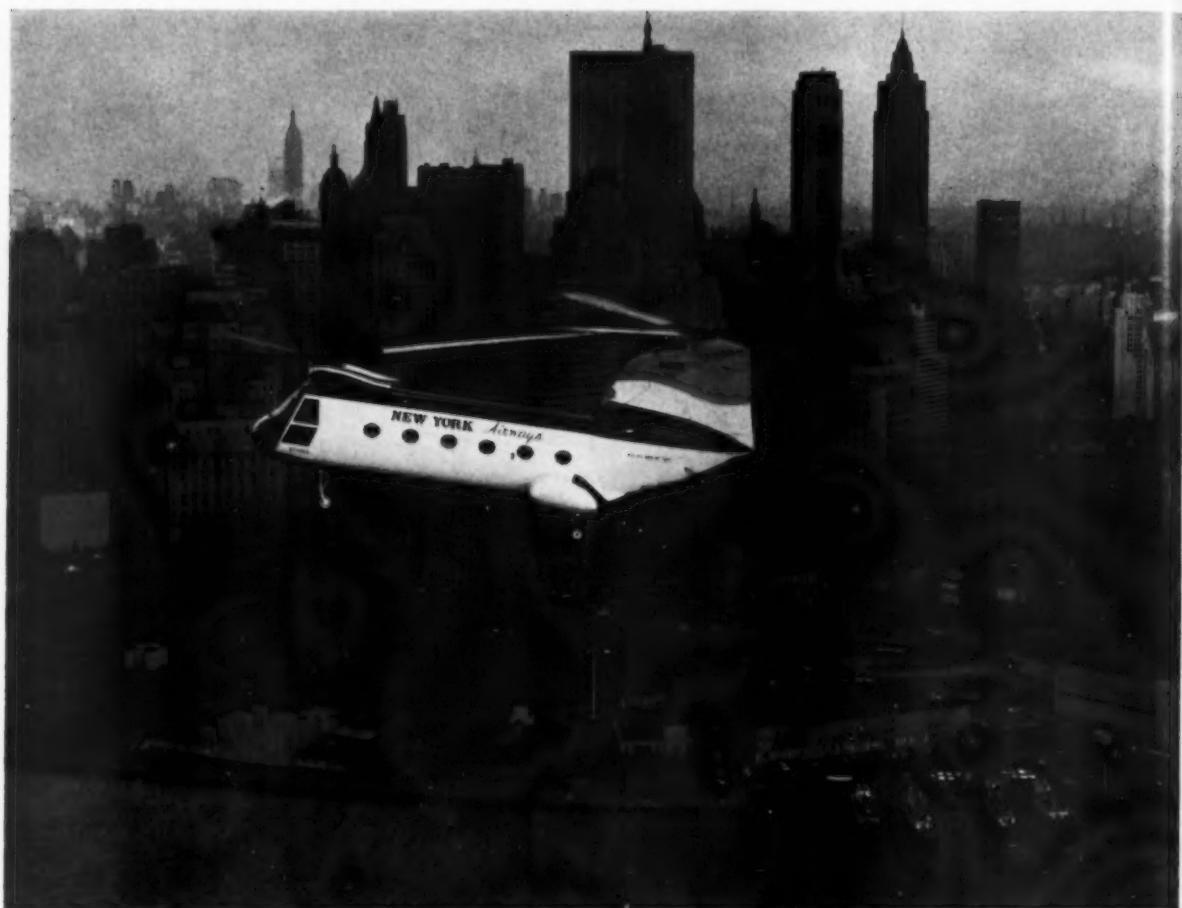
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**Debut of a Swing-tail
... Canadair's CL-44**

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TWIN-TURBINE HELICOPTER. The Boeing-Vertol 107 — fastest, smoothest-riding commercial helicopter now flying—goes into service with New York Airways this summer. It seats 25 passengers in comfort, cruises at 155 mph and has built-in

flotation for water landings. The 107 is now undergoing FAA certification testing. It has been ordered for service in Japan, Canada and Sweden. A special version was winner in recent competition for a U.S. Marine assault transport helicopter.

Capability has many faces at Boeing



JET-AGE FIRE FIGHTER. Boeing gas turbine engines power fire trucks in San Francisco and Seattle. These 330 hp engines weigh only 335 pounds, propel 15-ton trucks from standing start to 25 mph in 9 seconds.



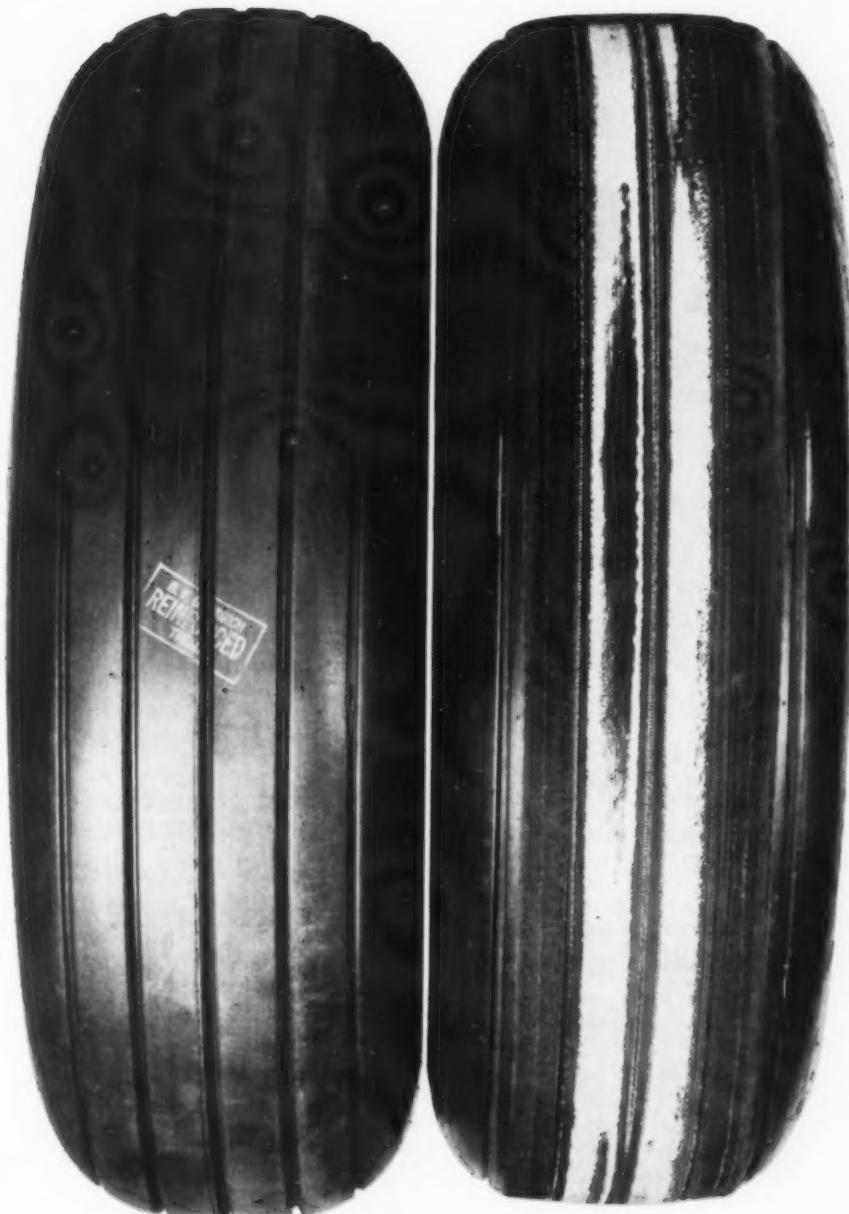
SPACE GLIDER. Drawing of U.S. Air Force's Dyna-Soar manned space glider, designed to rocket into space, then re-enter the earth's atmosphere for conventional pilot-controlled landing. Boeing is system contractor for Dyna-Soar.



OXYGEN FOR SPACE. Boeing space medicine research includes growth of green algae and conversion of carbon dioxide into oxygen in space vehicles. In test, a Boeing researcher has lived 56 hours on algae-produced oxygen in sealed space chamber, proving potential of carbon dioxide-algae-oxygen cycle.

BOEING

NEW JET TIRE SHOWS YOU WHEN IT NEEDS REPLACING!



Here's another B.F.Goodrich first in tires . . . a fabric tread jet tire with a built-in "wear indicator." A thin layer of light colored rubber at the bottom of the wearable skid depth signals you when it's time for tire replacement. This tire increases safety, and simplifies maintenance, since worn tires can't be overlooked. And, if you plan to retread, the "wear indicator" helps avoid running the tire beyond the point where it can be re-

treaded. This BFG improvement seems simple, mechanically, yet it required intensive development to assure compatibility of compounding. It is now available—at no extra cost—on all high speed fabric tread tires for military and commercial jets. For your requirements check your BFG sales representative. *B.F.Goodrich Aviation Products, a division of The B.F.Goodrich Company, Department AL-7, Akron, Ohio.*



aviation products

JT3D

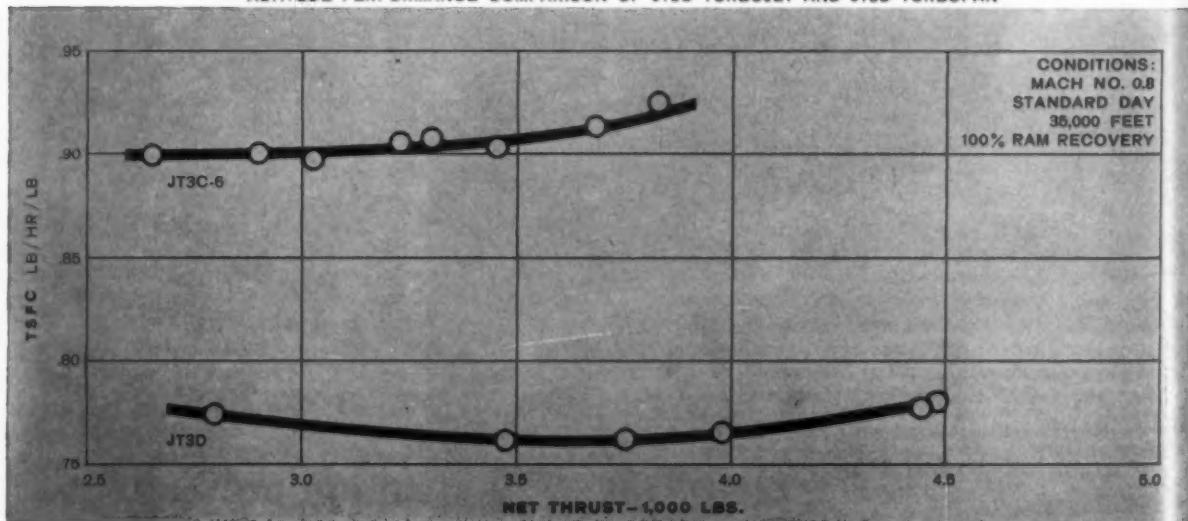
cuts TSFC 15%—cuts fuel costs 20%

Compared with the conventional turbojet, the Pratt & Whitney Aircraft JT3D-3 turbofan engine has demonstrated a saving of over 15 per cent in specific fuel consumption at comparable cruise thrust. (See chart below.) The effect on operating expense is obvious—less fuel, lower costs. Furthermore, the turbofan's fuel economy is paired with a 22 to 26 per cent lower specific weight than conventional turbojet engines operating today. As a result, the Pratt & Whitney Aircraft JT3D-3 makes possible increased payload, and more than 20 per cent greater range.

PRATT & WHITNEY AIRCRAFT Division of UNITED AIRCRAFT CORPORATION, East Hartford, Connecticut



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EDITORIAL AND BUSINESS ADDRESS

1001 Vermont Ave., N.W., Washington 5, D.C.

Phone: Sterling 3-5400; TWX: 1082. Cable: AMERAV

SUBSCRIPTION RATES Single copies \$0.40. For U.S. possessions, Postal Union and Canada: \$5.00 for one year, \$8.00 for 2 years, \$10.00 for 3 years. Overseas: \$7.00 for one year, \$12.00 for 2 years, \$16.00 for 3 years. Subscriptions limited to aviation industry personnel. For further information, write: Circulation Director, AIRLIFT, 1001 Vermont Avenue, N.W., Washington 5, D.C.

CHANGE OF ADDRESS Send old address (exactly as it appears on mailing label on your copy of magazine) and new address, including zone number if any to Circulation Service Manager, AIRLIFT, 1001 Vermont Avenue, N.W., Washington 5, D.C. Allow four weeks for change.

INCORPORATES Airports and Air Carriers; Aviation Equipment; The American Pilot; Aviation Sales & Services; U.S. Aviation; American Airports; Airports & Heliports and American Aviation. All rights to these names are reserved.

PUBLISHING INFORMATION Published once a month by American Aviation Publications, Inc., Washington, D.C. Printed at The Telegraph Press, Harrisburg, Pa. Second class postage paid at Washington, D.C., and at additional mailing offices.

Wayne W. Parrish President & Publisher
 Leonid A. Eisner Vice Pres. & Gen. Mgr.
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airlift

WORLD AIR TRANSPORTATION

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THIS MONTH'S COVER—Tail loading the Canadair CL-44 turbo-prop using the Allen "Cargolift" loader, as illustrated by *AIRLIFT'S* staff artist from an original photo by Canadair. For background analysis of airline planning in the introduction of air transport's first all-cargo airplane, read Robert Burkhardt's report on page 19.

20,100 copies this issue



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Transatlantic Squeeze

THE FULL IMPACT of expanded jet capacity, high fares, over-scheduling in the hot competitive battle, combined with a slackening of the American tourist traffic to date, hit transatlantic carriers in late spring and early summer.

It was not surprising that there were eastbound 707s with as few as 13 and 17 passengers on board. It was not surprising that load factors tumbled. If there was any surprise at all, it was the drop-off in advance bookings by "tourists"—the Americans who were expected to flood Europe this summer as they have in the past.

There are reported to be about 50,000 seats available weekly over the Atlantic this summer. That is mighty high capacity.

Will the Americans continue to flood Europe in vast numbers every summer? Is the supply of tourists inexhaustible? Nobody knows the answers for sure, but we have been of the opinion for some time that Europe would not continue forever as the end-all American vacation goal.

The French Algerian crisis in the spring, the American recession (which somehow was discounted in Europe), the change of U.S. political administrations, the "dollar gap" publicity early in the year, the generally unsettled state of world affairs, plus the increasing costs of vacationing in Europe, have all been contributing factors to a slump in transatlantic eastbound travel. The optimists expect an upward swing for July and August, but the fact remains that airline seats are available in unprecedented numbers.

What about fares? We think the airlines, generally, have been quite unrealistic when the speed of the jets is considered. The Atlantic is now a mere commuters' hop. First-class fares are very high for six, seven and eight hour flights. Not only is there a sharp disparity between first-class and economy fares, but the economy fares are so much greater than the group charter rates being offered by IATA carriers, that the average tourist well wonders why he has to pay so much for his own individual fare when his friends are traveling in the same types of airplanes at much lower fares offered to organizations.

There is now a proposal (again) before IATA for excursion and group fares that make sense. One carrier suggests \$199 round-trip for individuals in organized groups of forty-five or more, and a 23-day excursion rate to individuals of \$300. This is realistic. Furthermore, these fares should be available for the entire year.

The inevitable result of intense competition and great capacity is being felt on the political side in the U.S. There are now, for the first time, intensive pressures being exerted to restrict European carrier capacity for the protection of U.S. flag lines. It is not a pleasant battle when nationalism leads to protective restrictions in

what everybody had hoped would be a "freedom of the air" concept. There is much to be said on both sides, but it is unlikely that common sense will prevail when a cry of "survival" is raised.

But the heart of this problem rests in the extraordinarily inept manner in which "air rights" have been bartered by the non-aviation political desks in the Department of State on individual cases without the slightest effort to appraise the over-all problem. The trite old saying is ever true—the chickens have come home to roost.

Meantime, there are signs of increasing west-bound traffic to the U.S., much above expectations. Perhaps this is a normal increase, perhaps it is traceable to the "Visit USA" program. Certainly it should be expected that in due time everybody traveling over the Atlantic won't be a U.S. citizen in search of a holiday outlet in Europe. Perhaps the best goal for transatlantic carriers is for them to think of themselves as *transportation media* offering sensible, reasonably-priced standards of service—neither too plush nor too spartan—for the now-brief over-ocean flight.

Airlift at Paris

IN this day of missiles and satellites, it was refreshing indeed to see the emphasis on airlift at the biennial Paris air show last month. From private flying on up the line to passenger and cargo aircraft, the world's only truly international air exhibition proved pretty conclusively that aviation is very much alive and kicking.

Most significant was the emphasis on STOL and VTOL, both in actuality and in plans and projects. There is an increasing awareness that with airplane speeds at maximum (until the advent of supersonic transports) the next major stage in aviation must be high-lift and rotary-wing development for short-haul operations. Enormous progress is being made.

American participation in the Paris show was bigger and more impressive than ever. By all odds the most spectacular hit of the show was the record transatlantic flight of three B-58s.

But for reasons that will never be known, the pilot of one aircraft (not a transatlantic participant) decided to show off his B-58 during the two flying days of the show with an attempted half-roll or a roll. It is said that he positively did not have official permission for this reckless maneuver with the B-58. He lost control of an airplane that should never be used for acrobatics and the airplane crashed. It was the one sad and inexcusable part of what was a highly successful static and flying exhibition. Will some pilots ever learn that the day of such needless demonstrations is over?

Wayne W. Parish



LETTERS

Executive Training

To the Editor:

Please accept my congratulations on the stimulating and timely article by Dr. E. Krumbein in the April, 1961 issue titled, "Train Your Own Airline Execs."

I've been waiting expectantly for years for such an article to appear in some leading aviation magazine. All aviation magazines feature a flood of technological information. In the area of management training and development, however, a virtual drouth exists.

Let's see more articles of this type! They may be the incentive required to focus attention on the need for more ef-

fective programs of development in all levels of airline management.

J. P. LEWITZKE
Trans World Airlines
Kansas City, Mo.

Snow at Newark

To the Editor:

May I refer to the interesting figure claiming no hours of snow accumulation at Newark Airport during December-February last, attributed to the Port of New York authority in your article "New Equipment Keeps Runways Clear" (*AIRLIFT*, April).

The weather observations made during

the February 4-5 storm as taken directly from the remarks at the end of the F/A Service "A" teletype sequence reports for Newark reveal that at 1200Z (0700EST) there were 20 inches of snow on the ground. Ten hours later, after nearly six more inches had accumulated, Newark was officially closed by "Q" code Notam appended to the weather observation for that hour. The "Q" code Notam appended to the weather observation of 2100Z (1600EST) of February 5 officially opened Runway 11-29.

While the Notam code did not give snow accumulation as the reason for the airport being closed during the 23 hours from 2200Z on February 4 to 2100Z on February 5, it was plain to me that the snow accumulation of 26 inches was the primary reason for being delayed from taking off on February 5 until 2010Z (1510EST).

RICHARD BUEHLER
Aviation Manager
Newark, New Jersey

Transport Progress Issue

To the Editor:

In reading the 12th Annual Air Transport Progress Issue of *AIRLIFT*, I noticed several 1960 figures for Mohawk Airlines which appeared out of line with 1959 and 1958 results. Upon checking the information supplied to you on the questionnaire, I found items 2 and 3 had been incorrectly reported.

Item 2 requested Direct Operating Cost per Plane Mile Flown and we supplied Direct Operating Cost (including burden) per plane Hour Flown. The correct information for calendar year 1960 should be:

Convair 440	101.44
Convair 240	113.84
DC-3	71.71

Item 3 of the questionnaire requested Direct Maintenance Cost per Revenue Flight Hour. The information supplied you was based on Total Maintenance Cost (including Burden) per Revenue Flight Hour. The correct information for calendar year 1960 should be:

Convair 440	\$40.29
Convair 240	67.35
DC-3	24.92

You will note the corrected figures for 1960 are now in line and compare favorably with 1959 and 1958 results. Somehow, the Convair 440 and Convair 240 figures for 1959 and 1958 got mixed up in the maintenance cost comparison on page 103 of *AIRLIFT*. Mohawk did not operate any Convair 440 aircraft until August 1959.

Sorry for failing to catch the above aberrations furnished you on the questionnaire before printing time. However, steps have been taken to prevent this from recurring.

FRANK R. CHABOT
Treasurer, Mohawk Airlines
Utica, New York

Air Shuttle

To the Editor:

We appreciate mention of our "Air Shuttle" service between Washington, New York and Boston (*AIRLIFT*, May, p. 151). I wish to call attention to the fact that "Air Shuttle" flights operate

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Instamatic Reservations

To the Editor:

You are to be commended on your very clear and concise *AIRLIFT* article describing United's new Instamatic Reservations System . . . Everything is working even better than we expected and we are now hard at work towards the September cutover of complete space inventory. After several weeks of operation, we can now say from actual experience that we are extremely pleased with and proud of our new electronic reservations system.

M. L. PERRY
Director of Reservations
United Air Lines
Chicago, Illinois

Safety Confusion

To the Editor:

I agree with Capt. Bechtold's first "Pilot Talk" column.

It's obvious that the psychological effect that paper working has on the human being is upsetting for it is possible with the proper technical, logical and informative material we can prevent frustration and preoccupation by elimination of excessive paper work which adds to confusion and does not help the safety factor.

SALVATORE GALLI
Ex Flight Engineer
So. Farmingdale, N.Y.

Ed. Note: How's that again?

AIRLIFTS

• Metrecal aloft? That's the situation on Mexicana Airlines, which claims the distinction of being "the first airline to serve Metrecal on its international flights." Quite a switch from the usual airline penchant for stuffing passengers with all manner of elaborate—and high caloric—foodstuffs.

• On the subject of food, a "diet for overweight aviators" was suggested (but not necessarily endorsed) by the Flight Safety Foundation. To wit:

Monday

Breakfast: Weak Tea

Lunch: One bouillon in ½ cup of diluted water

Dinner: One pigeon thigh, 3 oz. prune juice (gargle only)

Tuesday

Breakfast: Scraped crumbs from burned toast

Lunch: One doughnut hole

Dinner: Three grains of cornmeal, broiled

Wednesday

Breakfast: Boiled-out stains of old table cloth

Lunch: One tail joint of sea horse

Dinner: Three eyes from Irish potatoes (diced)

Thursday

Breakfast: Two lobster antennae

Lunch: Bellybutton of navel orange

Dinner: Rotisserie-broiled guppy filet

Friday

Breakfast: Four chopped banana seeds

Lunch: Broiled butterfly liver

Dinner: Jellied vertebrae à la centipede

Saturday

Breakfast: Shredded egg-shell skin

Lunch: One-half dozen poppy seeds

Dinner: Bee's knees and mosquito knuckles—sautéed in vinegar

Sunday

Breakfast: Pickled hummingbird tongue

Lunch: Prime rib of tadpole, aroma of empty custard pie plate

Dinner: Tossed paprika and cloverleaf salad

Note: A 7-oz glass of steam may be consumed on alternate days to help in having something to blow off.

• "Matter of life or death," said the eager passenger as she sought reservations to New Orleans for September 19. The statement puzzled the ticket agent, who wrote out the reservation, since the date at the time was only June 9. "Simple," said the lady passenger. "If I don't get to go I'll just die."

• A South African 707 landing at Jan Smuts airport flew through a flock of guinea fowl, "feathering" the its P&W engines (which, naturally, continued to function effortlessly) and littering the runways with turbo-fried fowl. To play safe, SAA engineers decided to give the engines a stiff dose of cathartic. But castor oil no longer is the proper medicine: modern jets prefer walnuts, 200 lbs. per engine, diced into pea-sized particles.

• It was a routine training flight. The trainee flight engineer was making notes. Soon he noticed one of the engines belching black smoke. Panic stricken at first, he fought to control his emotions. With the wrench he held in his hand, he reached out and tapped the pilot on the shoulder. "We're on fire," he said. The pilot soon had the aircraft back on the ground. Proud of his coolness under duress, the green engineer was telling the ground crew how he spotted the fire, calmly brought it to the pilot's attention. Then he noticed the pilot being carried from the plane on a stretcher. "What's the matter with him?" the trainee engineer asked. "Broken shoulder," somebody said.

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NORTHEAST AIRLINES

COMING

July

July 17—National Aeronautical Services Assn., USAF contract services symposium, Hotel Washington, Wash., D.C.

July 19-21—Airlines Electronic Engineering Committee, General Meeting, Eden Roc Hotel, Miami Beach.

July 20-21—Assn. of Local Transport Airlines, Quarterly Regional Meeting, Grove Park Inn, Asheville, N.C.

July 24-26—Electronic Maintenance Engineering Assn., ATC facilities symposium, Mayflower Hotel, Wash., D.C.

August

Aug. 1-2—Airport Operators Council, board of directors meeting, Wash., D.C.

Aug. 3-6—North Central States Airport Managers Conference, Mason City, Iowa.

Aug. 19-24—IAS, commemoration of 50 years of naval flight, San Diego.

Aug. 22-25—Wescon convention, Cow Palace, San Francisco.

September

Sept. 4-10—Society of British Aircraft Constructors, annual equipment exhibit, Farnborough, England.

October

Oct. 3-5—1961 National Airports Conference, University of Oklahoma, Norman, Okla.

Oct. 8-10—International Northwest Aviation Council, 25th annual convention, Spokane, Wash.

Oct. 23-27—IATA, 17th annual general meeting, Sydney, Australia.

Oct. 30-Nov. 1—Air Traffic Control Assn., 6th annual conference, Miami Beach.

December

Dec. 5-6—(Tentative) FAA supersonic transport airworthiness conference, Wash., D.C.

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Airline pilots will tell you
"The new all-weather lighting systems work!"



Lighting installations are easy on concrete, even for existing runways. Cores for pancake lights are cut with standard portable rigs. Raceways for wiring are easily sawed and sealed. Idlewild Airport already has been modernized with complete centerline, narrow gauge and high-speed turnoff lights. Installation is under way on jet runways at Dulles International Airport.

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PORTL



or best on runways of modern concrete!"

Wide line and narrow gauge patterns on light-reflecting concrete runways provide high landing visibility—even in "zero-zero" weather.

Airports have always preferred concrete for its high visibility. Under all conditions, concrete reflects far more light than any dark surface can.

Concrete also has other advantages besides the added visibility from the new flush lighting systems. Only concrete permits permanent, trouble-free mounting of light fixtures. Concrete doesn't consolidate

under traffic, doesn't need frequent resurfacing that requires repositioning of lights.

Then, too, better braking becomes especially important in all-weather flying. In heaviest rain, tires can take a good, firm grip on skid-resisting concrete. For smoother take-offs, a solid, level concrete pavement means no disturbed air-flow over the wings. No dragging action on wheels, either.

You get economy, too. Concrete's tremendous strength and durability save real money through the years. It's the preferred pavement for *all* runways.



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AIR TRANSPORT TRENDS



Air Union

Insiders say Air Union is all but dead. If anything is salvaged from original Air France-Lufthansa-Alitalia-Sabena plan for a big combine, it will probably be only a loose sales cooperation.

Safety

U.S. aviation's role in "tall tower" decisions is getting some muscle. FAA Administrator Halaby has brushed aside radio-TV objections that his agency was invading the jurisdiction of the Federal Communications Commission with the blunt notice that there is plenty of legal foundation for FAA to decide what is and is not an obstruction to air navigation. A new FAA rule on tall towers goes into effect on July 15.

VTOL

Lockheed may stage commercial comeback with VTOL intercity transport. Decision will be made soon in Burbank whether or not the project will move into the hardware stage.

New Orders

Some South American lines are near to ordering medium or small jets. One carrier about to make its jet decision is Chile's LAN.

Equipment

Fokker is saying very little about its small jet transport. Basically an F-27 replacement, the plane, now in the advanced project stage, will have particularly good airfield performance. The Dutch company plans to use the Bristol Siddeley BS 75 fan engine in the transport.

Turbine aircraft now operate 40% of Aeroflot's services. Russians expect the figure to increase to 90% by 1965.

Economics

Across-the-board economy is the order at United Air Lines. Company's initial 1961 projection indicated expenses that would produce an available ton-mile cost of 29.1¢. But with new emphasis on economy, UAL's revised goal is 27.8¢, if forecasted revenues of \$541 million are realized. This would increase 1961 operating profit by \$25 million.

Airbus

Eastern's no-reservations shuttle flights are catching on fast. Load factor in first 35 days on Washington-New York-Boston service was just under 40%. And 931 out of 971 flights departed exactly on schedule. EAL has built \$500,000 terminal at LaGuardia just to handle shuttle passengers.

Certification

Should foreign plane makers back plans with money? Some FAA officials favor having these manufacturers put funds in escrow when they apply for U.S. certification. This would dissuade some companies from wasting time of FAA engineering staff on models which are unlikely to go into production or find a U.S. market.

New Fares

There have been big changes in Trans-Canada's domestic traffic. It has happened since Jan. 1 when TCA and Canadian Pacific shifted emphasis to economy service, started off-season excursion rates, and adopted tapered fare structure (higher rates for short haul, lower for long haul). TCA's business is up about 19%; traffic has swung from 75% first-class to 75% economy.

Special Fares

Rebates continue in South America. Latest IATA breeches action resulted in fines, some heavy, for almost every member carrier flying in and out of South America. This was despite earlier agreement by all airlines to stop rebating by one means or another. IATA's agents caught almost all of them willing to sell tickets at discount.



This is Mister Right-On-Time

Flight Captain Ted Raines—like all Braniff pilots—shares an exceptional reputation for punctuality. Braniff, as government statistics prove, is a leader in on-time records.

"On-timeliness" is just one of many Braniff bonuses. Consider, for example, our Silver Service meals...the "looked-after" feeling your clients will get from charming Braniff hostesses...and all the other friendly Braniff folks who serve them from

start to destination. Yes, and the luxury of Braniff's new El Dorado Super Jets.

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BRANIFF International AIRWAYS

INDUSTRY AT A GLANCE



POLITICS

Diplomatic flap—It was a big day for France. American and French flags were flying in Toulouse. For the first time, the French were to deliver a transport plane—Sud Aviation's Caravelle—to a U.S. airline, United. Big ceremonies were planned.

U.S. Ambassador James Gavin was expected to be there. But reports are that embassy officials advised him that the occasion wasn't sufficiently important for him to attend. And when French Transport Minister Robert Buron heard that Embassy Counsellor Jacques Reinstein was to be the top U.S. representative, he stayed home too.

Despite the diplomatic lapse, Toulouse and Sud put on a terrific show to mark the delivery. UAL president W. A. Patterson, who puts the first (of 20 ordered) Caravelle on New York-Chicago July 14, was made an Officer of the Legion of Honor—complete with a kiss on both cheeks which he clearly wasn't expecting.

SUPPERSONICS

U.S. moves ahead—A national program for development of a Mach 3 U.S. supersonic transport advanced on several fronts under a determined drive by FAA Administrator Halaby to get the project on its way.

Although set back slightly by a cut in Congress from \$12 million to \$10 million to underwrite a design study, FAA put together a 121-page study of SST airworthiness requirements for industry comment by October 1 and plans to hold an SST conference in early December (probably Dec. 5-6).

Simultaneously it launched a six-month sonic boom study in cooperation with the National Aeronautics and Space Agency and the Air Force to attempt to nail down once and for all whether future supersonic transports need to be banned from overland operations.

MERGERS

Merger for NEA?—After three months of internal hassling, CAB issued an order: It will investigate to see if Northeast Airlines' Florida route should be renewed. And, as part of the case, it will investigate whether NEA, which lost \$10.8 million last year, should be merged with another carrier if its route is renewed.

The merger issue caused the in-fighting at CAB. Two dissenting Republicans—Chan Gurney and

Whitney Gilliland—argued that only certificate renewal should be investigated.

But the three-man majority made it clear that merger was a very live subject. Copies of CAB's order went to all airline presidents with a letter which, in effect, invited them to submit proposals.

HELICOPTERS

Helicopter threat—No subsidy for helicopter lines after fiscal 1962. This was the edict handed down by the powerful House Appropriations Committee. For next fiscal year, helicopters can have \$5 million, instead of \$6.9 million requested, then no more, the group said.

The abrupt and unexpected action comes at a time when three helicopter lines are preparing for delivery of turbine craft that will cut operating costs substantially.

Strong efforts are being made on Capitol Hill to get the 1962 cut restored and to change the committee's attitude. CAB chairman Alan Boyd told the Senate Appropriations subcommittee that initially turbine helicopters will cost more, probably \$9.1 million subsidy for first year of operation, but that the amount will then trend downward.

LABOR

Crew issues unsolved—A U.S. presidential commission's effort to bring labor peace and economic sense to the cockpits of jets has won general support from airlines and general disagreement from the flight engineer's union.

The carriers endorsed these findings of the Feininger Commission named by President Kennedy after a disastrous mass walkout of engineers in late February: (1) a single cockpit union; (2) a three-man crew on jets added after May 24; (3) continuation of engineers on pre-May 24 jets with reasonably prompt reduction to three-man crew; (4) preferential rights for A&P certificated engineers in bidding third-seat jobs after May 24; and (5) new hires to be pilot qualified with no need for Aircraft and Power Plant licenses.

Flight Engineers International Assn. rejected the commission's proposals as lacking anything that would offer engineers the possibility of realistic negotiation. Unlike most international flag airlines, a number of U.S. jet operators do not use maintenance-oriented flight engineers and the net effect of the commission's recommendations would be that all carriers adopt 100% pilot-qualified jet crews.

Delta announces a New Southern Transcontinental Jet Route linking California and the Southeast

6 Jets daily between Los Angeles and Atlanta

new faster flight time now only slightly more than 4 hours via non-stop Delta jet! Other daily jet service links Los Angeles and Atlanta by way of Dallas/Ft. Worth and New Orleans. Convenient Atlanta connections to all the Southeast. Los Angeles connections to San Francisco, Seattle, other West Coast cities and Honolulu.

New DC-7 Service—direct flights between San Diego, Las Vegas and Dallas/Ft. Worth, New Orleans, and Florida. And later in the summer Delta will start jet service to San Francisco.



Delta jetliners now serve:

**NEW YORK • MIAMI • ATLANTA • TAMPA • NEW ORLEANS • MEMPHIS
WASHINGTON/BALTIMORE • PHILADELPHIA • DALLAS • FT. WORTH
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DELTA

the air line with the BIG JETS

ONLY DELTA FLIES BOTH DC-8 AND CONVAIR 880 JETS BETWEEN CALIFORNIA AND THE SOUTHEAST



— Present Delta Routes □ New Transcontinental Jet Routes □ New Transcontinental DC-7 Routes □□ San Francisco, Sept.

THE DAY OF RECKONING for the all-cargo transport is at hand. The long-awaited "breakthrough" airplane, Canadair's CL-44 swingtail turboprop—is about to enter airline operations.

Flying Tigers has its first copy, now being used for crew training. Second off the line is going to Seaboard World Airlines. Third carrier will be Slick, with delivery scheduled for September.

Talk to any of these airlines and the word you hear most is "revolutionary." Revolutions are risky, bring with them widespread changes and, if they are successful, promise great rewards. On this basis, Canadair's huge, unconventional, swing-tail turboprop is rightly called revolutionary.

It represents great risks for both its maker and its buyers. Canadair now has orders for 10 planes from the Tigers, five from Seaboard, and four from Slick. Serious interest has been shown by American Airlines, United, TCA, Lufthansa and KLM.

At one point Pan American was on the verge of placing orders, and had been promised delivery positions. Alaska Airlines is making plans to buy at least two, and Overseas National will operate two under lease from the Tigers.

Canadair is building five others on speculation. These may eventually be sold to the Royal Canadian Air Force, but they are the commercial, swing-tail models and if any of the presently hesitant airlines get serious, they are available.

Seaboard's progressive young president, R. M. "Dick" Jackson, told *AIRLIFT* that "some people call the CL-44 an 'interim' airplane. But how long is interim? What is coming along later? The only turbine cargo plane that can be ordered in the U.S. is a recently-announced model that appears to be very similar in characteristics and performance to the CL-44D. But this plane is two years or more away."

CL-44D is here now

"Meantime the CL-44D is here now. It will carry twice the load of present piston equipment, yet its direct operating cost on a plane-mile basis is about the same.

"Our CL-44Ds will be able to fly the North Atlantic non-stop with full payloads at better than 400 mph. They will carry a payload of 33 tons, or can be converted to accommodate 162 tourist passengers. They will fly into or out of any field that will take a Super-Connie. What more can we ask of a plane? Before we get anything much better than this, a lot of engineering and development will have to pass over the boards."

Seaboard is hustling to get its CL-44s into service. FAA certification is expected this month; pilot training already has started. Jackson feels that, with the CL-44, air cargo has a real chance to prove itself. A revolution in rate structures has been promised the shipping public, and will go into effect as soon as the International Air Transport Assn. and the Civil Aeronautics Board approve the new rates. But more than lower tariffs are needed, Jackson believes. One idea he is pushing hard is "passenger top off."

Since the passenger carriers are primarily interested in

ENTER the CL-44

By ROBERT BURKHARDT

KEY SPECS ON THE CL-44

Max. gross take off weight	205,000 lbs.
Max. payload	66,046 lbs.
Total cargo capacity	7,348 cu. ft.
Full normal fuel load	10,212 gals.
Cruise speed (at 165,000 lbs., 21,000 ft.)	402 mph
Dimensions:	
Fuselage length	136 ft. 10 in.
Wingspan	142 ft. 3 in.
Height at tail	38 ft. 7 in.
Engines (4) 5,730 shp Rolls Royce Tyne	
Propellers	16-ft. diameter de Havilland

carrying passengers, and top off with cargo, it certainly seems fair and reasonable to permit the all-cargo carriers to carry cargo, and top-off with passengers," he says.

These new rates and policies are not abstract matters, to be studied at leisure. The CL-44s are here now, and all three carriers are scrambling to fill the box-car holds of their aerial Leviathans. When Seaboard takes delivery next year of the last of its five planes, it will have the capacity to lift every pound of cargo now moving by air over the North Atlantic.

Similarly the Tigers and Slick, with their combined fleet of 14, could handle every bit of air cargo now moving domestically across the country.

New tariffs coming

Flying Tiger president Bob Prescott has had staff experts busy for more than two years working on new tariffs. He told *AIRLIFT* that he is confident that "with a realistic rate structure, the CL-44D, the first aircraft ever built with transcontinental air freight in mind, will provide as big a breakthrough in freight as the DC-3 provided in passenger transportation."

Prescott says that CL-44s will cost about \$2500 per day in fixed expenses, such as depreciation, insurance and interest charges. To spread this cost, a utilization rate of 15 to 16 hours per

day is planned. The difference between the usual eight hours and the 16 aimed for is about \$162 in fixed charges. This works out to nearly \$1 million per year per aircraft—or considerably more than the difference between profit and loss on the plane.

To get high utilization, turn-around time has to be cut sharply. A converted Constellation takes about four hours to load and unload. With its swing-tail, the CL-44D can be turned around, with twice as much aboard, in about 45 minutes. Flying Tigers has devised a completely automated loading system for the CL-44—"revolutionary," Prescott calls it.

"It is our purpose eventually to have all our cargo terminals automated to the greatest extent possible," he says. "We have our first one under construction in Chicago. Since these terminals cost more than a million dollars each, we will wait to see what mistakes we make on the first one before proceeding throughout the system." By using pre-loaded pallets and fully automated loading devices, Prescott not only expects to radically cut turn-around time, but also to cut labor costs for ground handling by at least 30%.

Earl Slick, board chairman of Slick Airways, is the latest airline official to join the CL-44D "revolutionary" forces. He told *AIRLIFT* that he considers the CL-44 "the first high lift, high speed turbine aircraft with low operating cost to be specifically designed for air cargo. It will reduce costs so that air freight rates can be lowered as much as 40% with tremendous savings to military and civilian shippers."

Slick has two CL-44Ds on order for delivery this year and is ordering two more for delivery next year. The use of these planes marks the beginning of an air freight price and speed "revolution."



AERIAL VIEW of Paris show. Fourteen nations participated. Buildings in background contained over 300 exhibits. At lower left is Tupolev 114, next to B-58.



SHORT AND ROLLS-ROYCE vertical lift is shown in exhibit. At left, Mark Howard, sales and contract manager, Short Bros. & Harland.



MODEL OF BREGUET 942, STOL transport, is viewed by Jean de Genouillac, company's commercial director, and Charles Raffin, press officer.



VTOL TRANSPORT, with eight General Electric lift fans, will be feasible in 1970s, says Peter Kappus, GE expert.



BRISTOL SIDDELEY Pegasus lift/thrust engines power this concept of a VTOL transport.



POTEZ 840, with four Astazou turbines, is aimed at feeder operators and corporate flyers.



HOSPITALITY CHALETS of manufacturers were centers of most shop talk among industry officials.

Air Transport At Paris

A Special AIRLIFT Report

By ERIC BRAMLEY and ANTHONY VANDYK

PARIS—There is no aviation event in the world anything like the Paris Air Show. Held every two years, the "Salon Aeronautique" attracts to the French capital's Le Bourget airport top men from every aerospace field in almost every nation that is important in the world of aviation.

These men go to Paris to see their customers, competitors and colleagues. They also go to see the aircraft and other products on display. However, since nearly everything shown has already been available for inspection elsewhere, the principal reason for looking at them is to compare different models virtually side by side and to get a general impression of trends.

This year, observers noted that:

Strong emphasis is being put on VTOL and STOL by both airframe and engine manufacturers.

France's Sud Aviation aims to be first with the supersonic transport—a version of the Caravelle that it hopes will be available by 1967. The plane will be transcontinental, not intercontinental.

The aircraft which attracted the greatest interest in the static show was the Convair B-58, which flew New York-Paris in 3 hrs. 20 mins., cruising at Mach 2 for 1 hr. 49 mins. It was the same aircraft which later crashed at the show's flying display.

Super Caravelle financing likely

In the main exhibition hall, a model of Sud's Super Caravelle was a main attraction. This is a four-engine Mach 2.3 transcontinental transport (2500 miles range) with a delta-like wing. Officials of the French company indicated that because Gen. de Gaulle considers aviation as an important "status symbol," it is likely that the government will finance a program to make the Super Caravelle available to operators in 1967. Other officials admitted, however, that much study remains to be done on the question of sonic boom during a transcontinental operation.

There was major interest at the show in VTOL. Most predictions were that, following military testing and development, vertical lift fixed-wing transports will be commercially feasible in the 1970s.

Among those working on VTOL are General Electric, with its J85-powered X353-5 lift fan system and J79 engine for lift fan and primary propulsion for large VTOL transports; Bristol Siddeley, developers of the BS 53 Pegasus, two shaft ducted fan engine with movable jet nozzles; Rolls-Royce, with the RB 108 (which powered the Short SC 1, only experimental VTOL at the show), and with other models coming along. Armstrong Whitworth reportedly has a VTOL development of its Argosy military transport

in the works, which would be powered by Rolls-Royce RB 162s.

General Electric predicts that commercial VTOLs, capable of carrying 60 passengers from city center to city center at about Mach .8, are a "very real possibility" during the 1970s. GE favors a convertible powerplant, which operates as a conventional jet in cruise and which serves as a lift fan for vertical takeoff.

Peter Kappus, a VTOL expert for GE, told *AIRLIFT* that one possibility is a double-wing airliner with eight lift fan engines. He pointed out that operating costs of a VTOL may be 20% to 30% higher than conventional aircraft because of the thrust needed for vertical takeoff. However, operators will be able to fly closer to the centers of population.

Pegasus uses movable jet nozzles

Bristol Siddeley officials believe commercial VTOL will be feasible by 1970. Instead of a lift fan, the company's BS 53 uses movable jet nozzles, by which the entire thrust can be directed downward for lift, backward for thrust, forward for braking, or in any intermediate direction.

For big long-range aircraft, Bristol Siddeley favors using BS 53s (or successors) with just enough thrust for cruising, and augmenting them with clusters of lift engines of very high thrust/weight ratio. G. T. Smith, sales manager, warned that because of the thrust needed, VTOL will present a major noise problem in city center operation. Used from airports, the craft can increase the traffic capacity and will result in less of a noise problem for surrounding communities, he added.

Observers at the show were impressed by French efforts to produce STOL aircraft available for delivery within the next couple of years. Breguet's four-engine blown-wing 942 transport project, developed from the 940 and 941 (the latter now in flight test) looked particularly promising. The 942 is expected to fly in 1962.

Powered by four Turbomeca Turmo IIID turbines of 1250 hp each, the plane's maximum takeoff weight will be 45,000 lbs. High-lift devices cover the entire 76.1 ft. span of the wing. At 3000 ft. altitude, takeoff run is 950 ft. on concrete, 1100 ft. on grass. Maximum speed is 240 knots, and cruise 215 knots.

The pressurized 942 can carry a maximum of 60 passengers; a movable bulkhead permits combination passenger-cargo operation. Breguet says direct seat-mile cost, computed by the ATA formula, will be about 1.5¢ for flights of about 500 miles.

Also attracting attention was the Holste Super Brouard 260 twin-turboprop high-wing STOL which Nord Avia-



STOL ENTRY is Holste Super Broussard. Takeoff ground run is 985 ft. Pressurized version will be built.



STRETCHED VERSION of twin-Dart Avro 748, carrying 60 passengers, was announced at the show.



BAC-111 SEAT MOCK-UP is occupied, (L to R), by E. G. Palmer, Elliott Bros. Ltd.; Alfredo Latour, Rolls-Royce representative in Rome; Charles Gardner, BAC publicity manager.



PILATUS PORTER with Astazou has 460-ft. ground run.

tion is to manufacture in a 262 pressurized version. The 260 is powered by two 1000-hp Turbomeca Bastan IVs and will cruise at 210 knots at maximum continuous power. Takeoff ground run is 985 ft., with 1640 ft. required to clear a 35-ft. obstacle. Gross weight is 21,600 lbs. Pressurized version will carry 26 passengers.

Of interest to business flyers and feeder operators was the four-turboprop pressurized Potez 840, which looks rather like a scaled-down Viscount. Turbo Flight Inc., of Chicago, is said to be interested in selling the plane in the U.S., at a price of about \$500,000.

Carries up to 24 passengers

Powered by four Turbomeca Astazous, each developing takeoff power of 523 shp, the Potez 840 can carry up to 24 passengers. In this configuration, range is 620 miles; maximum speed at 20,000 ft., 322 mph; cruising speed, 310 mph; takeoff weight, 16,200 lbs.; ground run, 1800 ft. The plane made its first flight three months ago.

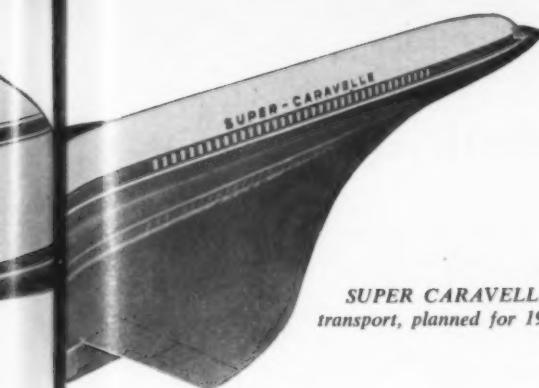
There was considerable comment about the Swiss Pilatus Porter, in which two Alaskan carriers are interested. The seven-passenger single-engine craft is powered by a Lycoming GSO-480-B1A6 supercharged engine, and upcoming is a model with the Astazou turbine. Here are the first preliminary figures on the latter model: takeoff weight, 4320 lbs.; takeoff, to clear 50-ft. obstacle, 738 ft.; ground run, 460 ft.; landing speed, 46.5 mph; cruising speed at 9800 ft., 158 mph; range, 500 miles. Price will be \$52,000 without radio and before duty.

The Paris show was full of business aircraft, piston-engine, turboprop and jet, some in the hardware state, some in mockup form, and others merely projects. Many of these projects seem to have little chance of selling, although most of them represent attractive designs. However, few of the manufacturers seem to have made market surveys, or to have asked operators what types of aircraft they really want. Already some companies are getting cold feet and are turning to military trainer versions as their main hope for large sales.

Russian transports fail to show

Big disappointment was the non-appearance of three Russian transports new to the West—the turbofan Tupolev 124, the Antonov 10 (somewhat similar to the C-130) and the Antonov 24 (a virtual copy of the F-27).

The Russians apparently were miffed at France's cancellation of an invitation for Gagarin to attend the show, after it became known that President Kennedy would be in Paris at the same time as the cosmonaut. So the Reds sent only a Tupolev 114, the giant turboprop that was at the 1959 show. Its sheer size made it the largest aircraft



SUPER CARAVELLE, Mach 2.3 transport, planned for 1967.

at the show and it attracted considerable attention. But technical men who inspected it dubbed it a monstrosity.

It was particularly regrettable that the Russians did not send any helicopters, since they are reputed to be far advanced in this field. The U.S. and France had strong helicopter representation, and there were demonstrations every day.

Coinciding with these demonstrations was a very effective series of takeoffs and landings by de Havilland-Canada's Caribou, which proved that the twin-engine (P&W R2000) transport is truly a STOL vehicle. Lockheed's BLC-130 also showed impressive STOL performance. The Lockheed LASA 60 utility transport, being built in Italy, Mexico and Argentina and priced at just over \$20,000, was demonstrated.

The British at the Paris show particularly featured their smaller transports. A new 60-seat version of the twin-Dart Avro 748, featuring a six-foot fuselage extension, was announced by Hawker Siddeley (observers had a magnificent opportunity to compare the flying qualities of three "DC-3 replacements"—Avro 748, Dart Herald and F-27—which were demonstrated consecutively). British Aircraft Corp. disclosed improvements to the payload/range performance of its twin-jet BAC-111. Short Brothers and Harland unveiled a new air cargo terminal concept primarily intended for use with the Belfast freighter now under development.

Chalets are popular meeting places

Excellent opportunities for informal discussions were provided in the hospitality "chalets" occupied by most of the major manufacturers. It was in these chalets, in some of which top-ranking French caterers provided multi-course lunches, that a lot of business was transacted at the show. Two major U.S. companies, Boeing and General Dynamics, had no stands in the exhibition hall and operated exclusively—and successfully—from chalets. On the other hand, Douglas had only an indoor display.

Organization of the show was good. There were many improvements over the 1959 event. But the cold weather and frequent rain were not on the side of the organizers, the French Aircraft Industries Association. The ground was turned into a sea of mud in many places, and one exhibitor had to spend over \$1000 for gravel so that visitors could approach its chalet.

There were several minor gripes, such as French customs' refusal to clear literature for distribution at the show when it arrived after opening day. But the complaints were few, and in general it was evident that the French have succeeded in making the Paris Air Show the world's No. 1 international aviation event. ■

Seen and Heard at the Show

• Repeated comments heard about strength and confidence of French aircraft industry. Success of Caravelle and French helicopters are good examples. Secret of French success: (1) concentrating on areas where foreign competition is least significant, (2) not hesitating to use foreign engines and components where French products aren't available or aren't up to standard required.

• U.S. representation was better than at any previous show. Exhibits were excellent; top manufacturing officials were on hand. Executive aircraft and helicopters were present in impressive numbers.

• Add Braniff to those interested in British Aircraft Corp.'s BAC-111 twin-jet transport. There's also interest among U.S. local service lines. BAC-111 exhibit at the show attracted much attention. In addition to cutaway model, BAC showed seats from the plane, in 3-2 configuration. The company's very savvy Christopher Hamshaw-Thomas was on hand to supply details.

• Two busy Alaskan airline presidents at the show were Northern Consolidated's Ray Petersen and Wien Alaska's Sig Wien. They're seriously considering purchase of Swiss-built single-engine Pilatus Porter.

• Russians were also busy. They swarmed over U.S. and British engine exhibits, using tape measures, cameras, etc. On the other hand, they weren't interested in showing the public through their Tu-114.

• Two U.S. helicopter airline execs were present: Bob Cummings, president of New York Airways, and Wes Moore, executive v.p. of Chicago Helicopter. Also seen touring the exhibits: Dave Baker, former president of Capital, now v.p. and general manager of international division of Vickers Inc.

• Much interest in Caravelle which General Electric has been using as a test bed for its CJ805-23 aft-fan engine. Plane flew the Atlantic (setting Gander-Shannon twin-engine record) for the show, then left on European demonstration tour. From wheels up at Gander to VOR station at Shannon, time was 3:52 at altitude of 33,000 to 37,000 ft. Both true ground speed and true airspeed was 513 mph. statute. Dick Scoles, GE's chief test pilot, and Swede Davis, copilot, did the flying.

• Sud Aviation is all out after a TWA Caravelle order. Has offered immediate use of a Rolls-Royce-powered model for pilot training, with first deliveries next February. TWA then would be able to turn planes back for GE-powered VII models later in 1962.

• Accessory and equipment manufacturers rate praise. Impressive exhibits showed wide range of equipment—radios, seats, galleys, recorders, navigation equipment, seat belts, windows, spark plugs, to mention a few.

• F-27 isn't near the end of the road yet, say Fokker officials. They feel they may sell two a month for possibly six or seven more years.

• Westland's Rotodyne vertical lift craft was scheduled to be in Paris, but didn't show up. Reason: It's undergoing modification and test in England. Kaman still has U.S. licensing agreement covering Rotodyne.

Idlewild of the West Coast . . .

'Airport Spectacular' Opens at L.A.

By RICHARD VAN OSTEN

LOS ANGELES International Airport—air transportation's "Idlewild of the west coast"—officially opened the doors of its spectacular new terminal June 24-25 with dedication ceremonies and a special public preview. But actual use in airline operations, which had been set to begin June 29, will not get underway until July 20 when United inaugurates service from its modernistic new facility.

Conceived well before commercial jets were an operating reality, the L.A. terminal greets its first jet passengers just two and one half years after the introduction of jets in the United States.

The terminal is one of the most impressive and grandiose in the modern family of new jet facilities. A vast parking area which can accommodate 5000 automobiles is being built on a level one floor below the ramp, in the center of the terminal complex.

The nucleus of the sprawling assembly of satellite buildings and loading aircraft is an ultra-modern restaurant which soars 135 ft. above the parking area, supported by graceful steel arches and bathed in glass and concrete.

Extensive and imaginative use of color and heavy reliance on modern materials—vinyl plastic coatings, plastic laminate, mosaic tiles—characterize the look-of-the-future which has been an underlying motive in the design of the terminal.

The vastness of the complex is difficult to comprehend at this still incomplete stage of construction. The public lounge, located near the high-floating Theme Structure, alone is equivalent to the size of two football fields.

A total of 64 gate positions will be provided at six satellites, which will accommodate 10 jets each, and at a smaller rectangular apron east of the south ramp, which will provide four more positions. At total capacity, assuming 30-minute turnaround, it will be possible to service 125 jets per hour. If need exceeds even this generous capacity, more 10-gate satellites can be added.

New baggage scheme for United

Typical of the lavish new systems being developed to speed passengers through the terminal is United's half-million-dollar baggage-handling scheme, being developed by Rapids-Standard Co., Inc., Grand Rapids, Mich. D. H. Robertson, United's passenger service manager, says the system will accommodate 1500 persons per hour.

TWO-LEVEL design concept is emphasized by cut-away diagram of satellite building. Parking lot appears on the right.

Fuel for the jets will be provided by Shell Oil, which has installed 14 miles of piping for satellites 2, 3 and 6, and Standard Oil which also is providing an extensive fueling system.

Pacific Telephone has put in a \$2.6 million communications network which includes 38,000 miles of cable and wiring, 1500 telephones, 275 pay phones, 200 teletypes and two equipment buildings.

Still under discussion is a "Skylift" passenger transport system, devised by Lockheed Aircraft Service, which would be an overhead rail, closed loop concept with 134 four-passenger cars suspended from dual rails 33 ft. above the ground. The automatic vehicles would function from elevator-like push-button controls. A 25-cent deposit would carry a passenger between widely separated stations on the 7470-ft. system in four minutes.

The long, flowing lines of the ticket satellites; the "flying buttress" design of the high-level restaurant; and the two-level concept which routes passengers from parking lot to telescoping loading bridges testify to the imagination of Charles Luckman Associates, coordinators of the project almost from inception.

A \$70 million investment

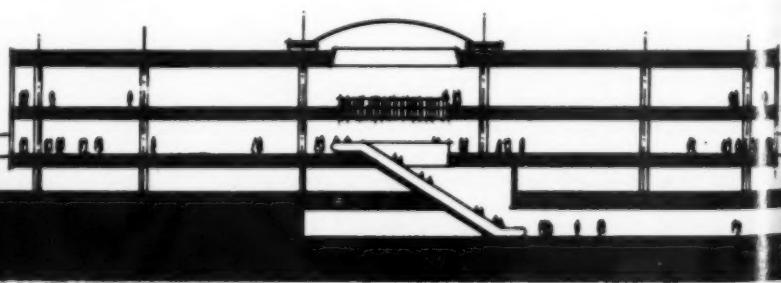
The terminal represents a \$70-million investment by the airport and participating carriers. Basic financing was provided by a \$59 million bond issue voted in 1956. Part of this fund is being used for Van Nuys Airport, which serves general aviation.

Typical of the facilities which will greet passengers is the United complex of satellite and ticketing buildings. Extensive use of glass and aluminum and pastel colors characterize the decor, suggesting a pattern which will be followed in other airline facilities throughout the terminal.

United will occupy ticketing building No. 7, a two-story structure with foundations designed for addition of a third story if needed. The building is similar to those to be used by TWA, international and regional carriers. Cost of the facility was about \$1.5 million.

The building is approximately 500 feet long and between 60 and 70 feet wide. The first floor, at parking lot level, is devoted to ticketing, baggage check-in and claiming. The second floor will be used for office space.

United also has two satellites, No. 7 and No. 8. The latter is a rectangular building with about 77,000 sq. ft. of floor space and four gate positions. Boarding will be made from the second floor through eight telescoping Jetways, similar to those in use at San Francisco International. The \$1.8 million satellite also contains office space.





FUTURISTIC AERIAL VIEW of spectacular terminal complex is characterized by architect's drawing, showing towering "Theme Structure" surrounded by 5000-car parking lot, satellites and boarding aircraft. Parking lot is below ramp level.

Satellite 7 is more typical of the other satellites under construction. It has four levels. The bottom level is connected with the ticketing building by a 400-foot-long tunnel. Escalators take passengers from this level to the loading level where there is a large circular waiting lobby, restaurant, cocktail lounge and other operations offices, baggage handling, and storage for top-off freight for passenger flights.

In United's ticketing building the street-facing wall is glass and aluminum. Other walls are covered in light-gray vinyl, with supporting columns in light yellow vinyl. Interior lighting is continuous-strip, recessed fluorescent, with incandescent lights for color balance. The ticketing area wall is an olive and blue glass mosaic, fronted by the ticketing counters.

The public rest room area, centrally located, has an outer facing of red vinyl. Doors to the rest rooms are screened by a wall covered with a teak-grain laminated plastic. Floors in all ticketing and satellite buildings are off-white terrazzo.

Ticketing-building-to-satellite tunnels are faced with white tile on one wall and a glass mosaic mural on the other. The mural spans the entire color spectrum as a passenger moves down the corridor. Ceiling height also varies.

Escalators and rotundas

At the satellite end, a stainless-steel escalator carries passengers through a circular well, past the ground (ramp) level to the main public level. The rotunda rises past a mezzanine level and is topped by a dome with alternate blue translucent glass and solid facets.

Large lobby areas lie at each end of the elongated oval satellite buildings. Check-in counters and holding areas are located around the periphery of lobby floors.

Restaurants and cocktail lounges will be operated in each satellite as well as the Theme Structure by Interstate Hotels, which has made an investment of over \$2.5 million. The main restaurant is scheduled to open Oct. 15. Different themes will be used in each restaurant and cocktail lounge. In the United "offbeat" satellite, No. 8, there will be a

stand-up snack bar with a decor theme of "California Desert Flowers." The cocktail lounge will have a "California Wine Industry" theme.

The next three ticketing and satellite buildings to go into operation will be Nos. 3, 4 and 5, for TWA, American and Western. Although scheduled for completion in August, the three carriers may wait until after the Labor Day holiday to move. American has indicated it may not start service from its area until September 10.

Variety of costs

Costs vary considerably at the new terminal area. United's two-story ticketing building cost \$1.5 million; its No. 8 satellite \$1.8 million; and No. 7, \$2.6 million. There is \$4 million of United's money in the three buildings. TWA's two-story ticketing building, No. 3, cost \$1.25 million; the TWA satellite (No. 3), \$2.3 million. TWA also has invested \$3.5 million in various areas.

The most expensive ticketing building is No. 6, for the regional carriers: Bonanza, Pacific, Pacific Southwest, Los Angeles Airways, Avalon Air Transport and, according to present plans, three trunk carriers, Continental, Delta and National. This facility will cost over \$1.8 million.

The parking lot franchise, actually a contract for collection operations, was awarded to the Airport Parking Co. of America, Cleveland, under a five-year contract. APCA will receive 20% of the first million of gross receipts from parking, plus 2.4% of all gross receipts in excess of \$1 million annually. The airport expects an annual income of \$1,755,000.

The Federal Aviation Agency expects to move into the 172-foot tower sometime this month where it will occupy six floors plus the tower proper.

All major site preparation has been completed. The \$3.1 million utility building, which supplies heating and air conditioning to all ticketing and satellite buildings, has been in operation for several weeks. The Central Services building is complete. Runway 25L has been lengthened to 12,000 ft. Runway 24R, an 8925-ft. strip, is completed and in limited use.

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First Cost Data On Boeing's 727

New short/medium range turbine
has low seat costs, breakeven need

By JOSEPH S. MURPHY

FIRST PERFORMANCE and economic details of Boeing's 727 peg the seat-mile costs of the three-engine jet at only 1.2¢ for all-tourist arrangements and 1.5¢ for a mixed-class operation.

The breakeven load factor for the two types of services would fall below the 50% mark over a 500-mile range. Direct operating costs, which run \$2.20 per plane mile for the very short 200-mile segments, dip to \$1.20 for a 1475-mile stage. In first-class services, seat-mile costs over a 500-mile stage will be a shade above 2¢.

These key economic factors, the first set down by Boeing for its newest jet, are based on a 70-passenger first-class layout, a 28-first-class/66-coach seating for mixed-class and a 113-passenger arrangement for all-tourist seating.

In breakeven need, the first-class 727 operation would require slightly more than a 60% load factor, but a 2000-lb. cargo load would dip this to about 55%. However, with passenger seating trends leaning more and more toward mixed-class and perhaps eventually all-tourist jets, the likelihood of "all first-class" 727 services seems somewhat remote.

Only 51% load factor needed

In mixed-class operations, which now appear most likely, a 51% breakeven need on passengers alone would drop to 45% with a ton of cargo. This would mean only 42 passengers. In an all-tourist situation, a 44% breakeven need drops to 40% with cargo payload, the equivalent of filling only 45 of the potential 113 seats.

The most inviting feature among the new breed of smaller jets, and the 727 emphasizes it, is the pleasant reversal of

the trend of early jets toward longer runways and higher landing speeds. The 727's stall speed of 87 knots and "over the fence" speed of 101 knots will return airline jets to a performance area reminiscent of the DC-6B.

The 727's airfield performance reflects the marked gains made through the combination of the turbofan engine and more effective high-lift devices. CAR field length for sea level/standard day remains about 5000 ft. for takeoff even at 140,000 lbs. gross. Landing distance ranges from 4000 to 5000 ft. for weights from 90,000 to 132,000 lbs.

Boeing's typical flight profile for the small jet shows an ability to climb to 20,000 ft. in less than 10 minutes and to attain 35,000 ft. in 20 minutes. Descent from 27,000 ft. will take about six minutes.

Full payload for 1300 miles

The payload-range curve for the 727 shows a maximum payload potential of 24,000 lbs. out to about 1300 miles. It then slants on a straight line to about 14,000 lbs. at 1800 miles. Use of a long range procedure, however, permits full payload range up to about 1700 miles, dipping to about 15,000 lbs. at 2000 miles.

A "residual range" plot by Boeing shows the versatility of the 727 in one-stop, non-refueling operations. For a 1400 mile segment with an intermediate stop at 400 miles, the 727 could take off, use max. cruise thrust at 25,000 ft. and land at the intermediate. Then, with no additional fueling, the second segment could be flown at Mach .86 cruise at 30,000 ft.

The 727's P&W JT8D-1 turbofans are each rated at 14,000 lbs. thrust. At a basic weight only 20 lbs. shy of 3000 lbs., they present an attractive 4.7-to-1 thrust-to-weight ratio. SFC for the JT8D at 35,000 ft. and a speed of Mach .82 is .812 pounds of kerosene per pound of thrust per hour.

System details of the 727 reveal emphasis on simple, straightforward design so necessary to facilitate maintenance and service in shorthaul operations. ■

727 Highlights

Total on Order	112
Customers	Eastern (40); United (40) American (25); Lufthansa (7)
First flight due	late 1963
Gross weight	142,000 lbs.
Payload	24,000 lbs.
Capacity	1st class—70; Mixed—94 All-tourist—113
Cargo volume	850 cu. ft.
Fuel Capacity	7,000 gals.



Air Transport As Aler Sees It



I. A. Aler retired from KLM on June 1 after having been its president since 1954. He had 28 years of service with the company. Just before he handed over his office to E. H. van der Beugel he gave some frank views on the present position of world air transport in general and KLM in particular in an interview with AIR-LIFT's Anthony Vandky.

Q. What do you consider are the main problems confronting the airlines?

A. The principal problems nowadays are marginal profitability and the hampering influence of protectionism.

Q. Do you feel airlines should cooperate commercially as well as technically as do SAS and Swissair?

A. Cooperation in the commercial and technical field has existed in aviation for a long time past, as is illustrated by the pool agreements on many European services and the technical cooperation at foreign stations. It is indeed attractive to carry this form of cooperation as far as possible, assuming of course that the (air) political situation permits this and that the company retains its own identity. Cooperation in civil aviation can be the means of reducing costs and a better possibility of combining efforts in various sections.

Q. What are your views on improving surface transportation to airports to cut down overall journey times?

A. There is now an absurd discrepancy, especially on the shorter routes, between the rapid transportation by air and the connections from the airports to the city centers. The primary solution is the adaptation of surface transportation to the volume of traffic. Monorail and helicopters are too expensive for profitable exploitation which must at the same time be attractive for the public.

The airlines must work very hard to induce the authorities to accept improvements in facilitation. IATA is also doing useful work in this connection, but there is still a wide field open.

Q. Have you any ideas on ways to use piston engine aircraft displaced by the jets?

A. We believe in the application of differential rates. The conversion of passenger aircraft into all-cargo aircraft can also be a solution. In addition, piston-engined aircraft can be used for high density charter without frills and for "inclusive tour" traffic.

Q. Do you feel the supersonic transport will be a benefit or a curse to the airline industry?

A. The problems involved are extremely complicated and are still largely unsolved, so that this question cannot simply be answered in the affirmative or negative. In the first place an exact answer must be based on a thorough study by the parties concerned of supersonic transport ton-mile costs. Only then will it be possible to determine whether the supersonic aircraft will be interesting from a commercial viewpoint.

The present provisional calculations are usually based on a price per seat. As it is assumed that there will be no freight capacity at all, it is not out of the question that the ton-mile cost will indeed be higher than that of the present subsonic aircraft.

However, on specific long distance routes the supersonic transport will be introduced and fulfill a role which intercontinental passengers will be prepared to pay for.

Q. Is finance still a big problem for the expansion of KLM?

A. Our equity (paid-up capital and surplus) enabled us to borrow sufficient funds at long term (bonds) and at medium term (\$70 million bank loan) to finance our transition to the jet age.

We financed the purchase of 12 Electra II and 13 DC-8 aircraft. At present we still expect two DC-8 turbofan aircraft in 1961 and the last (the thirteenth) in 1962. The financing of this transition—which was at the same time the biggest expansion ever accomplished by KLM—is taken care of. Our present financial position still leaves room for additional orders, though they will not result in an expansion of the same scope as we are experiencing at present.

Q. Do you see any signs that government restrictionism on traffic rights, capacity, and frequency is decreasing?

A. No, no decline, more a tendency to the contrary. Needless to say, we regret this development since this is not in agreement with the policy of a reasonable degree of freedom in the air, as supported by the Netherlands government and KLM. This is the only policy which is to the interest of both the travelling public and civil aviation.

Q. What advantages does KLM derive from cooperation with Air Ceylon, VIASA and RAS?

A. Technical/operational advantages: (a) better utilization of fleet; (b) possibility of interchange of aircraft and crew, again giving better utilization; (c) standardization and subsequent rationalization of aircraft types and spares, combined with division of labor; (d) mutual commercial assistance.

Q. Why has KLM ordered no jets smaller than the DC-8?

A. KLM is of the opinion that the turboprop Lockheed Electra II meets the specific requirements of the KLM network better than the pure jets available at the moment. However, there are plans to purchase jets for short and medium-haul distances within the not too distant future. No choice has been made yet.

Q. Which is the route where you expect to see the greatest development over the next few years?

A. The traffic on the North Atlantic will continue to develop to the tune of the last seven years. Depending on political and economic developments, it is expected that the growth percentage of the traffic to Africa, South America and the Far East will considerably exceed that of the North Atlantic traffic.

Q. So you believe that the growth of KLM that has taken place during your term of office will continue at the present rate? Will it increase or will it slow down?

A. It is most likely that KLM's growth will follow a similar trend until air transport (passengers and freight) has come into its own. From that time on the growth will be in accordance with the overall world trend in economic development. ■

By ROBERT L. TWISS

THE BOEING CO., as a result of intensive windtunnel tests and flight checks with its Model 727 demonstrator, has resolved the configuration of high-lift devices and aft-engine mounting for its new Model 727 short-to-medium range jet transport.

The 727, a 142,000-lb. airplane designed for stages from 200 to 1700 miles, will feature both leading-edge slats and Krueger flaps, with triple-slotted flaps on the trailing edge of the wing.

Resolution of production configuration for the high-lift devices, which will assure good short-field performance for the newest member of the Boeing family of commercial jet transports, was completed in about two and a half years of work, including 18 months of flight-test time on the demonstrator.

No prototype for 727

"You can't develop high-lift devices, as we have done here at Boeing, in the windtunnel alone," explained Joseph F. Sutter, engineering technology manager for the Boeing transport division. "We won't have a prototype for the 727. The first plane from the Renton factory, due next year, will be a production machine."



J. F. "Joe" Sutter heads project which decides final designs.

High Lift Test

Year-long program at Boeing on prototype wrings out various BLC techniques. Fifth engine rig gains data for aft-mounted jets on 727

"So we have used the Dash 80—named for the last two numbers of its engineering designation—as a partial prototype for our study of high-lift devices for the 727," Sutter continued. "We are confident this flight-test work will pay off handsomely in the 727 production program."

Decision on the design of the high-lift devices and the placement of the aft-mounted engines on the 727, however, required hundreds of hours of windtunnel time and 223 hours of air time in 214 flights with the Dash 80. Scores of combinations of high-lift devices were flight-tested. Boeing also did considerable work to determine if blowing boundary-layer control would be more satisfactory than triple-slotted flaps on the trailing edges.

"We think blowing boundary layer control has great potential for later planes, but it will require more development."

FIFTH ENGINE on prototype airplane (below) is used to simulate wing-engine relationship of aft-mounted jets on 727.



Testshape 727



ment work," Sutter explained. "We tried using high-velocity bleed air from the JT3 engine on the demonstrator at the junction of the wing and flap.

"In fact, we checked the entire low-speed flight regime with this type of boundary-layer control. We found its efficiency fairly comparable to a triple-slotted flap," Sutter said.

"To the extent we investigated blowing boundary layer control, however, we saw a need for separate power sources, since we weren't able to get enough bleed air from the engine at the power settings used during approach," he said.

Boeing tried several variations of the double-slotted flap type used on the 707 on its 727 tunnel and flight-test programs. The problem was to develop a flap with twice the power of those on the 707 to assure adequate 727 short-field performance.

"One way to do this job is to put on a bigger flap; another is to increase the flap efficiency," Sutter said. "So we have done both for the 727—increased the area as well as the efficiency."

Triple-slotted flap looks best

The triple-slotted flap has a large foreflap to produce a large curvature radius, which allows the air flow to come over the wing and bend readily around the flap. At small flap angles, the slots are closed. At larger angles, the slots open up to increase the flap area.

"This increases the wing area by 25% with fully extended flaps, compared with less than 15% on the 707," Sutter explained. The 727 foreflap will not be affixed to the main flap as in the case of the 707 family.

Sutter, a 16-year veteran with Boeing, estimates about 75 percent of the demonstrator's flight time the past 18 months has been devoted to the study of high-lift devices.

"We have found that we can get as much lift in a swept wing as in a conventional straight-wing plane like the Stratocruiser by the triple-slotted flaps and the leading-edge design we will incorporate in our 727s," Sutter said.

"We will have at least twice the lift increments in 727 flaps as in those of a 707 or DC-8, which should give us a superb short-field airplane," Sutter said.

"Our main problem, of course, has been how to get proper flight characteristics with the high-lift devices. Whenever you put powerful trailing-edge installations on a plane, you make the leading edge more critical," he explained.

"So then you go to work on the leading edge to get satisfactory stalling characteristics. Leading-edge devices twice as powerful as those on jets flying today are required.

"When you load a swept wing, the outboard panel tends to show stall separation, and the plane rolls off and pitches. So the Boeing windtunnel and flight-test program led us to the conclusion that you install slats at the tip of the wing-span.

"You tailor the slat angle as you go inboard," Sutter continued. "Then you put a Krueger flap on about the inner third of the wing next to the fuselage, so the slats and the flap extend the full length of the leading edge."

Both flaps and slats on 727

The Krueger flaps keep the air flow at proper ratios at high angles of attack. Boeing tried several variations on Krueger flap size and slat angle before resolving the 727 production configuration.

"We wanted approach speeds on the order of the latest straight-wing planes like the DC-7," Sutter explained. "And we have matched this. In fact, we will be even slower than the Electra on approach."

Sutter said the high-lift devices installed on the Dash 80 actually have improved the already good approach characteristics of the demonstrator. The plane now approaches more nose down, permitting better pilot reference. Flight tests of the devices were conducted not only at various altitudes but at different speeds and flap-setting combinations.

As a result of the windtunnel and flight tests, work so far has "shown unusually high lift coefficients of between 2.5 and 3 for the 727 wing," Sutter said.

As for the aft-mounted "fifth" engine Boeing installed on its demonstrator, Sutter explained the power plant was placed on the left-hand side of the demonstrator in the same relation to the wing as the 727 side engines will be.

A concern in aft-mounted engines has been that near stalling speed, the engines reflect the stall effect off the wing.

"Boeing, fortunately, found a large degree of tolerance from the test mounting," Sutter said. "We never did get to a condition in flight test where the engine would quit."

Sutter pointed out this has been a serious problem with more than one smaller jet being developed today. Boeing will mount its aft engines on the 727 farther back and higher than on some other jets. During its test program Boeing made several variations in the engine inlet, so the engine would operate more efficiently at all angles of attack.

More test work with high-lift devices is on the demonstrator's schedule. Boeing, for example, will study emergency procedures in asymmetric flight with the demonstrator. It also may install a JT8D, the 727 engine, on the demonstrator as added test insurance. ■



AIRLIFT Photos.

ELEPHANT AND MOUSE: FAA's prototype Mobile Lounge dwarfs Renault "compact" parked beside it.

FAA Unveils First Mobile Lounge

THE MOST CONTROVERSIAL item of equipment to grace the airport terminal scene in many a year, the FAA's Mobile Lounge is pictured at Dulles International Airport recently as it was about to undergo accelerated service tests.

Although the outcome of these tests will shape its final destiny the lounge has become the target of many critics. Its cost has skyrocketed from an estimated \$100,000 a copy to a point beyond \$200,000. The problems of "mating" its airplane end with the variety of cabin doors and integral stairs have turned a simple concept into a complex design.

Some say the Dulles terminal is beyond the point where

the lounge can be scrapped. To others, \$200,000 is a prohibitive cost (it would take two to unload and load a big jet). An answer should come soon as new FAA Administrator Halaby is pressed for a quick decision, one which will make some form of passenger loading available at Dulles when the airport opens its doors in early 1963.

FAA is caught in a squeeze. The lounge represents a concept it forced on the airlines and the carriers are not eager to soften its specifications one iota to help FAA out of its self-made mess. The doors at FAA are wide open to some astute manufacturer who can come up with a quick answer, preferably a lounge with a \$100,000 pricetag. ■



LOUNGE DRIVER views airport from twelve-ft. high vantage point.



INTERIOR of Mobile Lounge reflects modern decor with broad glass windows, extensive use of fiberglass, detachable cushions. Lounge holds 90.

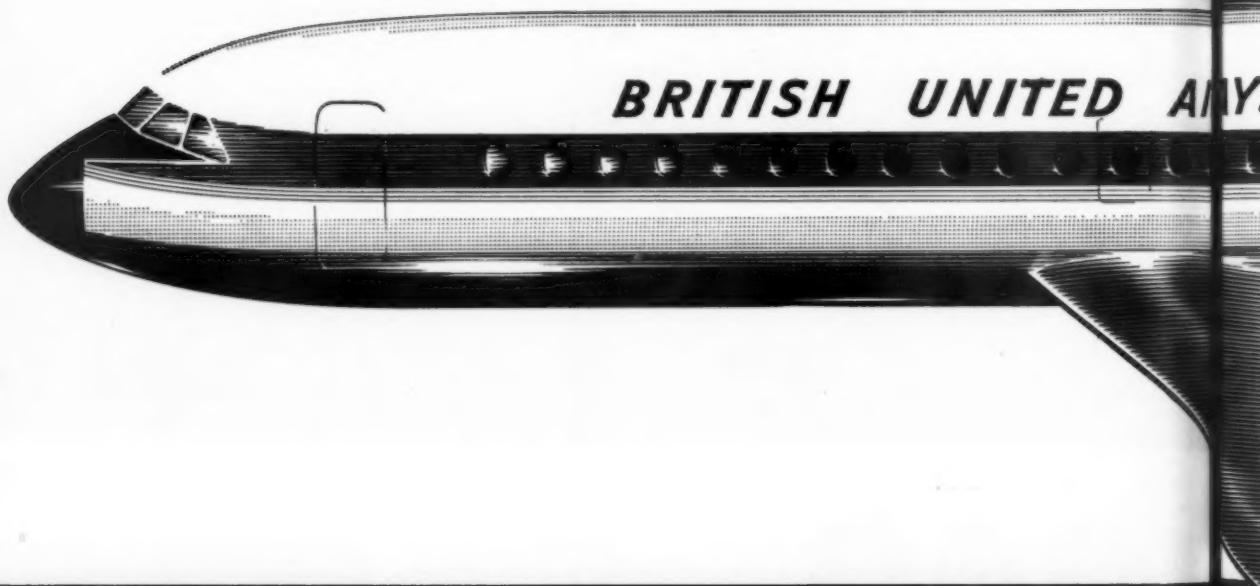
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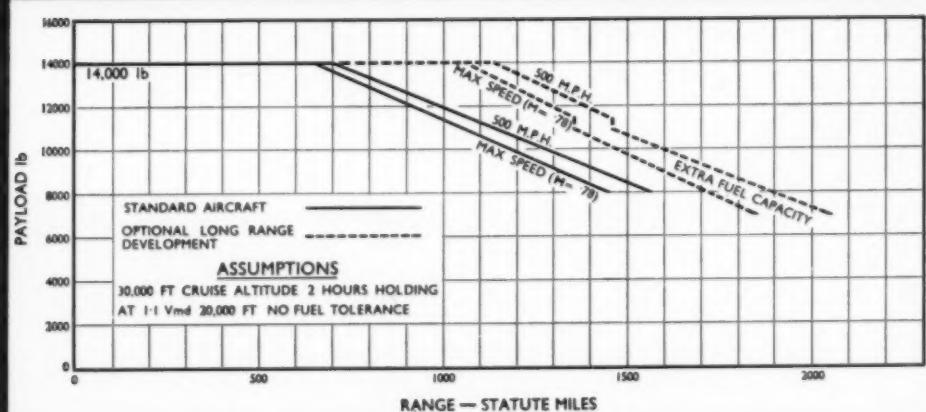
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- 540 m.p.h. cruise speed
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- Short airfield performance
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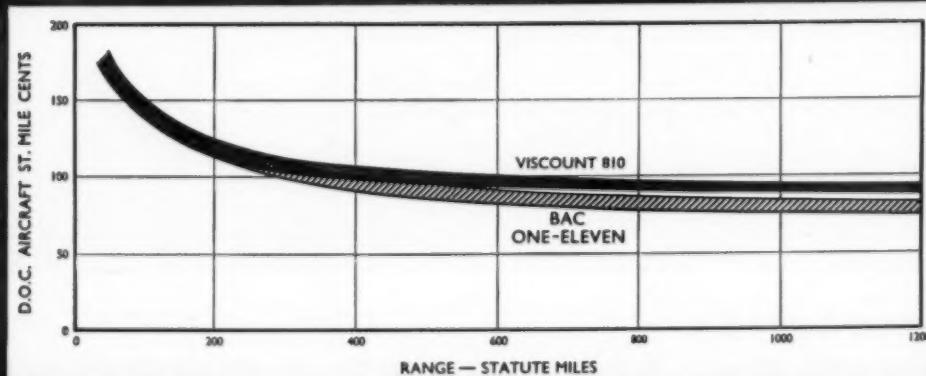
BRITISH UNITED AIRWAYS HAS CHOSEN THE OPTIONAL LONG RANGE DEVELOPMENT OF THE STANDARD AIRCRAFT

The BAC One-Eleven can carry its full complement of 57 mixed class passengers and baggage at 500 mph for stages of 1,070 statute miles with two hours reserves. It can carry 43 passengers for 1,500 miles.

PAYOUT v. RANGE



ECONOMICS



These graphs cover
airline aspects
method of costing
ATA (1962),
ATA (1967),
SACAC and those of
various airlines

BRITISH AIRCRAFT CORPORATION

TECHNICALLY SPEAKING

By Joe Murphy

Airport victory over birds . . . Aerosol is exonerated . . . Incidents of interest



Birds at Boston—Airline operations officials are highly optimistic over the results of a two-month long effort by the airport management, FAA and Fish & Wildlife Service to divert sea gulls from Boston's Logan International Airport. The gulls descended upon Logan about April 1 and by April 14 a full-scale effort by the three groups was underway.

Shotgun patrols were organized to ride from before daybreak until 7 p.m. Nearby dumps were restricted to non-edibles to reduce their attraction to gulls. Fish & Wildlife called in its experts from throughout the U.S. to contribute to the campaign.

Airport manager James F. Byrne gets a good deal of credit for spearheading and cooperating in the yeoman effort. By late May, the gulls had been successfully steered to new nesting sites. (Next assignment: starlings at Boston in August).

Doppler tests—Pan American has narrowed its Doppler navaid evaluation to two "finalists," Bendix and Collins. It will equip a couple of 707s with dual systems (both Collins and Bendix in the same airplane) for a side-by-side operational test before making its selection.

Aerosol cleared—Investigators of the TWA 707 cabin fire at San Francisco back in February have given Aerosol bombs and the oxygen system a clean bill of health. Cause was traced to (of all things) the lavatory flushing motor which had been contaminated by de-gum solution. Arcing of the motor ignited the terminal block, then the

toilet seat, then the cabin. Fix is to "pot" the motor terminal block.

Jet oil change—American Airlines is converting to Esso's TJ-15 Turbo oil permitting an increase from 300 to 500 hours between oil changes on its P&W JT3 jets. First airline to adopt TJ-15 was Continental.

According to Esso, TJ-15 is quite different in chemical structure from its predecessor Turbo Oil 15, having more advanced types of additives.

A new approach—We've seen and heard of many approaches to the no-show and oversale problems, but the legislation introduced in the California State Assembly tops them all. It provides that a passenger on an intra-state flight shall forfeit the price of the ticket if he doesn't notify the airline in writing of a cancellation at least 72 hrs. before scheduled departure.

Also, if an airline sells a ticket and there is no seat available, (an oversale), the airline has to pay the passenger double the cost of the ticket!

Mechanical intelligence—Month in and month out the daily mechanical reports filed by U.S. airlines with FAA continue to build up a new store of knowledge on how (sometimes how not) to design, build, operate and maintain airline transports. We had the opportunity to look over a recent 30-day's activities and these items caught our eye as "need to know" info for all operators:

• **Teardown of a JT3 engine**, removed because of excess vibration after 162 hrs. since overhaul, revealed

bearing failure due to stoppage of an oil passage by cleaning solution which had not been flushed out at overhaul. Carrier is completely revising jet overhaul cleaning procedure.

• **At Atlanta**, x-ray inspection of an 880 disclosed water in honeycomb panels of wing, empennage, flight controls and tabs due to inadequate sealing of honeycomb panels. A similar situation was noted on DC-8 during overhaul.

Both incidents closely resemble experience in early 707 operations wherein repetitive descents from high altitudes into moist air at low altitudes permitted water to build up in poorly sealed tabs. Subsequent operation at high altitudes led to freezing and distortion of honeycomb structure.

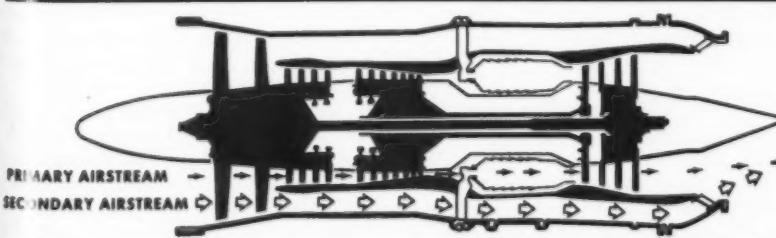
• **At Munich** during take-off run the warning horn on a 707 sounded and takeoff was aborted. Inspection showed foreign object ingestion in one of the engines apparently occurring after start of takeoff roll.

• **At San Francisco**, inspection revealed that burning cigarettes had fallen between the ash tray and case on the flight deck of a Boeing 720, permitting smouldering material to exist between the cockpit lining and fuselage structure. Operator is fabricating a metal liner for the ash tray.

• Following inflight static discharge on nose of a Lockheed 1649, radome fell from aircraft on touchdown, was struck by No. 3 prop resulting in damage to fuselage and wing leading edges. Radome failure is being investigated.

Supersonic talk—Recent speech by BEA's chief engineer before a Canadian technical meeting was entitled "Who Will Be The World's Most Dangerous Airline?" Some say it reflects considerable concern among some international flag carriers that the "World's Most Experienced Airline" is talking seriously about an SST order.

Supersonic boners—"Within a decade," says Fortune magazine, "U.S. businessmen may be commuting to Europe in planes so fast they overtake the sun." A neat trick we'd say, going the wrong way, that is.



PROFILE of the P&W JT8D, which will power Boeing's tri-jet 727, shows annular ducting which will enclose the secondary airstream stirred up by the front fans. JT8D is rated at 14,000 lbs. thrust.

Simulators Spawn Problems Aplenty

By BILL WILKS

• "FAA asks too much of the simulator."

• "The air carrier and the simulator manufacturer must try to second-guess the FAA."

• "Freeze dates on technical data are completely unrealistic."

• "Updating the simulator becomes a nightmare of dollars."

These complaints, voiced by simulator, airframe, and airline representatives throughout the country, have resulted in a two-pronged drive to do something about what has been called industry's "bastard child," the flight simulator.

One aim is to revise the Federal Aviation Agency regulation on simulators; the other to convince industry itself to change its practices. Specifically, industry accuses the FAA of greatly increasing simulator cost by requiring simulators to produce extremes of performance never used in training, and, in effect, of using secret standards by which to judge simulator performance for certification.

Industry is blamed for boosting simulator cost by taking an unrealistic approach to a task which should be regarded as a joint effort requiring the closest cooperation of all concerned.

Simulator revisions due

A list of proposed revisions to the FAA simulator regulation, drawn up by the Society of Automotive Engineers' Ground Support Equipment (SAE-GSE-3) Training Committee, soon will be in FAA hands. Latest revision proposals were distributed throughout industry for comment following committee meetings held in conjunction with the recent Aviation Conference of the American Society of Mechanical Engineers in Los Angeles. Jack Hudson, chief of the FAA's Air Carrier Operations Branch, who attended the meetings, said he expected the FAA soon would publish the proposals in the Federal Register for circulation and comment.

J. E. Ekstromer, chairman of the Regulatory Standards Analysis Subcommittee of the SAE-GSE-3 group, said that the FAA sets pilot training "within relatively narrow limits while requiring simulators to produce a range of conditions which are, in some cases, far wider than those in which pilots train."

"This includes such things as full stall simulation," he said. "We ask, why require this when it is not used in training? The same question applies to center of gravity limits."

In its comments on the proposed change in the section of the regulation regarding stalls, the training committee points out:

"There are two items to take into consideration in this paragraph: (1) The fact that if an air carrier has no simulator, he is not required to go any farther than stall warning; (2) On reviewing the Civil Aeronautics Manual, 40.282, 1302, and .305, it was noted that there is no . . . requirement for going into the full stall in the training curriculum. In trying to analyze this requirement, the question arose as to why the simulator was being punished with respect to (these) two items."

The committee also asks for a precise definition of the term "performance" in the regulation, stating, "we feel this should be defined as being within the normal ranges encountered —normal center of gravity limits and, in the case of speeds, the limitations of the approved flight manual for the simulated aircraft."

The committee recommends:

"The data furnished by the FAA should be of the type used in training on an aircraft, specifically due to the fact that anything over . . . this delivers an unrealistic approach to the training requirements spelled out in the instruction curriculum. Why demand more of one piece of equipment than is required of another (the aircraft) during proficiency check?"

The second major gripe against the FAA is that it doesn't reveal to industry the data against which simulator performance is judged for certification. The committee argues strongly here, stating:

"The present system of submitting aircraft data on which to base approval of simulators results in confusion since the FAA data against which the submitted data are judged is not known to the industry. The FAA should approve and announce to industry the most accurate data available and then utilize these data to measure the fidelity of simulator performance."

FAA spokesmen have answered this by stating that much of the airframe data is proprietary in nature.

The data the FAA uses comes under fire.

"We held several discussions with the FAA regarding its method of obtaining the data for conducting the simulator acceptance tests," Ekstromer said. "If the aircraft has been established, the FAA uses the Type Inspection Report which it compiles from the certified airplane test data. If the aircraft is new, the FAA gets the information from the Development Reports compiled by the airframe manufacturer's testing division."

A different interpretation

The trouble is that from either of these reports, the FAA applies an interpretation of its own in compiling the numbers and graphs for the simulator tests. The FAA might pick numbers from a curve which will result in tolerances that are far out of line with simulator performance, although there is nothing wrong with the simulator."

The GSE-3 committee comments:

"The air carrier must, because of existing circumstances, come to the airframe manufacturer to obtain data gathered from the certified aircraft. It must then try to second-guess the FAA in trying to check out the simulator to the same conditions that the FAA intends to use."

These conditions may and have varied to the extent that the two parties are in complete disagreement. This accomplishes nothing in respect to what is wanted as an end result.

"It is recommended that the FAA supply the air carrier with copies of its numbers and curves and have the air carrier check the simulator to this data."

Another revision proposal concerns cancellation of approval. That section of the regulation now reads:

"The failure of the simulator to meet the prescribed standards and tolerances established above shall be sufficient reason for the disapproval or the cancellation of approval of any course or training program predicated on the use of a specific simulator."

The Analysis Committee proposes the paragraph be amended to read:

"The failure of the simulator to meet the prescribed standards and tolerances established for a particular maneuver shall be sufficient reason for the disapproval or the cancellation of the use of the simulator for this maneuver until corrective action has been taken."

The Training Committee declares it-

self in "wholehearted" agreement with this proposed change, commenting:

"Why punish for one or more variations to the recommended requirements? The negative areas only should be disqualified."

The committee also made these observations:

State of the art—Flight simulator design has progressed very rapidly in the past few years, but this progress by its very nature and limited quality requirements is not of the high-production type and is, therefore, costly. This . . . resolves itself into a question of how far the customer wants to go in training. Each added item is a cost item. The tighter the tolerances, the more expense . . . therefore, anything the FAA over-emphasizes in its requirements also increases maintenance and exaggerates the costs.

Tolerances—In analyzing the FAA-required tolerances, it was found that under most of the conditions existing in the requirements, the majority were inside the tolerances acceptable on the aircraft."

Performance vs. estimate

The other problem, the one industry seeks to solve within its own ranks, is an inherent one stemming from the fact that the simulator must be built to the aircraft's estimated performance and then updated to match actual performance. The airline wants the simulator at least two months prior to delivery of the aircraft for transitional training, for as one airline training supervisor put it, "these days, writing off transitional training against simulator cost is the only way we can really make the simulator pay off. Simulator time costs about one-fifth of what it costs to fly the airplane."

To meet this demand, the simulator manufacturer wants the aircraft performance data at least 18 months prior to the time he has to deliver the simulator. This is the so-called technical data "freeze date." Changes made in the aircraft after this date may or may not go into the simulator, depending upon the flow of updated data from the airframe manufacturer and whether the changes can be made without affecting the simulator delivery date.

The air carrier complaint is that the delivered simulator, while all right for transitional training, may have to be updated extensively for proficiency checks. An airline representative summed up the situation this way during the Los Angeles ASME conference:

"One of the biggest problems is the technical data freeze date. Roughly two years prior to commencement of training, you cut off the technical data. This results in a simulator that is quite different from the actual aircraft . . . so



SIMULATED TERRAIN on wall at left is seen in cockpit as pilot attempts to "land" simulator. Technician (center) makes equipment adjustment.

you have a very costly program of updating that simulator. My plea to the simulator manufacturer is to find some means whereby the technical data freeze date can be brought closer to delivery of the simulator."

Airline and airframe spokesmen say the simulator manufacturer doesn't need all of the aircraft data 18 months in advance, that he could "get along on the basic information for awhile.

Ekstromer reports the air carrier and the airframe manufacturer are trying to solve the complaint "by seeing if the simulator manufacturer can set a series of freeze dates instead of just one."

"Perhaps the simulator manufacturer could set a freeze date of 18 months prior to delivery for the aerodynamics, 16 months for the power plant and 14 to 12 months for the system design," he said. "The idea is that in spreading out the flow of information to the simulator manufacturer, the simulator will be more up to date and the cost of updating will be brought down."

Lag in information

James Kennedy, West Coast engineering manager at Curtiss Wright's Electronics division, reacted with this comment:

"The problem can be overcome by providing for a very fast flow of information from the airframe manufacturer as he makes changes in the aircraft. One of the problems in the past

has been that the airframe manufacturer tells us, 'our boys are all tied up designing the airplane, you're going to have to wait.'

"At the time of contract negotiations between the airline and the simulator manufacturer, arrangements must be made for the airframe manufacturer to provide the information *as he obtains it*. This way, we can often incorporate these changes into the simulator design even after the so-called freeze date. The military does this. Under the military contract, there is a continuing flow of data, enabling the simulator people to keep the thing up to date.

Other industry spokesmen back the idea of making the problem a contract matter.

H. B. Crockett, flight simulator research specialist at Lockheed Aircraft Corp., Burbank, Calif., advises:

"Get recognition of the simulator data problems into the very first contract for the airplane."

J. R. Gannett, The Boeing Co., Renton, Wash., who was in charge of the Boeing 707 training program, suggests that the simulator manufacturer put a team at the airframe manufacturer's plant.

"You would have to have a contract statement that the aircraft manufacturer would supply the data," he said. "I think if the simulator manufacturer and the customer would push this program, the aircraft manufacturer would have to go along."

United Tops 'On Time' Roster, TWA Ranks No. 1 With Jets

United Air Lines, with an 81.7% record of flights arriving within 15 minutes of its published schedule, topped the U.S. domestic trunk airlines for the month of March. Braniff, American and Eastern rounded out the top four.

In big jet operations, TWA led the trunks at 75.2% on time with Continental, United and American in second, third and fourth spots, respectively.

Capital, operating Boeing 720s leased from United, showed a phenomenal 87% on-time performance for the month.

In 880 services, Delta showed a 50% on-time record to top the list of Convair operators. TWA and Northeast, both still in the early stages of 880 operation, had 47.5% and 19.8% records.

National led Electra operators with

100% on-time performance, but reported the results of only 12 flights for the month. American, with an 80.3% on time record, headed the list of carriers reporting substantial operations. Significantly, all Electra operators were above 75% in on-time performance.

West Coast, North Central and Frontier topped the locals, all exceeding 80%.

ON-TIME BOXSCORE

MARCH, 1961

Airline Ranking	Total Flights	On time to 15 min. late
TRUNKS		
1 United	4502	81.7%
2 Braniff	1335	80.4
3 American	6191	78.9
4 Eastern	4333	78.8
5 TWA	2686	76.8
6 Western	215	74.8
7 National	697	72.0
8 Continental	1457	71.3
9 Capital	2364	70.7
10 Delta	1999	61.5
11 Northeast	2806	61.0
12 Northwest		Strike period

707 & DC-8

1 TWA	1022	75.2%
2 Continental	391	74.9
3 United	1429	72.0
4 American	1289	69.0
5 Eastern	770	67.5
6 National	339	66.3
7 Braniff	186	62.3
8 Delta	444	52.2
9 Northeast	62	51.6
10 Western	12	50.0
11 Northwest		Strike period

720

1 Capital	240	87.0%
2 United	435	77.4
3 American	558	57.5

880

1 Delta	578	50.0%
2 TWA	160	47.5
3 Northeast	558	19.8

ELECTRA

1 National	12	100.0%
2 American	1298	80.3
3 Eastern	538	77.6
4 Braniff	95	76.8
5 Western	140	75.7
6 Northwest		Strike period

LOCAL SERVICE

1 West Coast	247	89.8%
2 North Central	1147	83.6
3 Frontier	229	81.6
4 Central	97	79.3
5 Southern	255	78.4
6 Piedmont	50	76.0
7 Allegheny	536	73.8
8 Mohawk	787	73.1
9 Ozark	712	69.1
10 Pacific	173	65.6
11 Lake Central	453	60.9
12 Trans-Texas	225	59.5
13 Bonanza	390	49.2

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- ✓ High underseat clearance for closer spacing.
- ✓ Interchangeable on all DC-6, DC-7, and Super Constellation series.
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- ✓ Quickly installed or detached for flexible passenger-cargo use.
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Hangar and service ramp at Airways Service, Inc. . . . Sioux City Municipal Airport, Sergeant Bluff, Iowa. Flight office is at right.



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Top-notch facilities and the "will to serve" have made Airways Service at Sioux City a favorite stop for both private and commercial fliers. The municipal airport offers as much as any pilot could ask for—11,000-foot runways, high intensity lights, ILS, FAA weather, LF localizer, Omni, and a modern terminal with air-conditioned restaurant and lounge. Located just 100 yards from the terminal, Airways Service completes the picture with prompt and efficient 24-hour service—mobile refueling with high performance 80 and 100 octane Phillips 66 Aviation Gasoline . . . licensed A&E overhaul and emergency repair . . . and for overnighters: tie-down, hangar space, and car rentals (including special-rate pilot cars). A Mooney Distributor, Airways Service also does a brisk business in sales, student training, and modest-cost custom air travel.

For outstanding facilities and "custom service," put down at Sioux City Municipal Airport and taxi to Airways' ramp. You won't be disappointed!

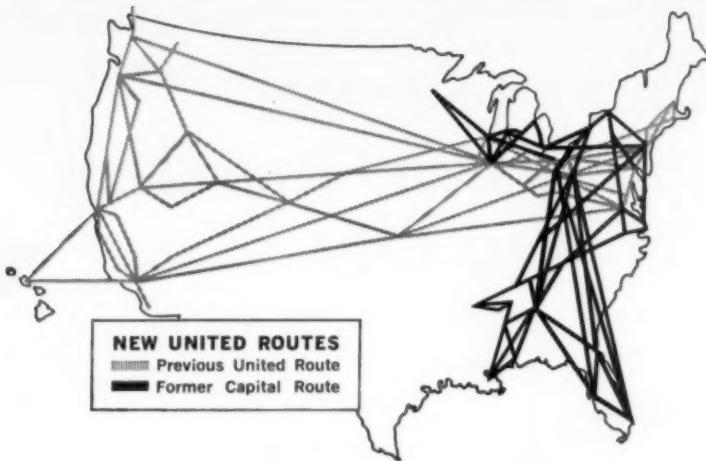


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Now...Capital Airlines is a part of United Air Lines

This gives us the privilege of adding 41 new cities to those we now serve, and extends United's operations to a total of 117 cities in the U.S.

The Civil Aeronautics Board has approved a plan in which the routes, the equipment and the personnel of Capital Airlines join United Air Lines. For some time we have hoped we could broaden our service by adding Capital's 41 cities to our own. The CAB's approval has given us this opportunity.

But the privilege of increasing our service means more to us than simply an opportunity. Being the nation's number one airline is a responsibility, too. To make the most of this opportunity, we intend to fulfill our responsibility to the utmost.

We have been known for the Extra Care we take in everything we do. We want to extend this reputation to our new cities.

Over the next few months, we will be working toward the complete consolidation of Capital with United.

We will soon have our first combined timetable, and we will thus extend United service to a total of 117 cities.

As your passengers visit cities previously served by Capital, they will see outward signs of change. Capital ticket offices and airport facilities will take on United identification. Capital plane interiors will be refurbished.

But more importantly, and hand-in-hand with these visible changes, will go the extension of Extra Care to all of the new United areas.

With this unification, United Air Lines becomes the nation's number one airline. We are glad to have the size to serve air travelers well. But it is more important to us to offer the finest air service than to offer the most.

W.A. Patterson

W. A. Patterson
President
United Air Lines



U.S. Airline Revenues and Expenses

1st Quarter 1961 vs. 1960

This complete summary compiled by AIRLIFT magazine from Official CAB Records

	Total Operating Revenues			Passenger Revenues			Total Operating Expenses			Net Operating Income		
	1961	1960	% Change	1961	1960	% Change	1961	1960	% Change	1961	1960	% Change
DOMESTIC												
American	\$ 89,647,613	\$ 94,270,998	-4.9	\$ 78,999,711	\$ 84,015,049	-6.0	\$ 92,602,783	\$ 95,649,636	-3.2	-\$2,955,170	-\$1,378,638	...
Braniif	18,049,714	17,023,287	6.0	16,596,266	15,601,178	6.4	18,172,369	17,459,666	4.1	-122,655	-436,379	...
Capital	24,742,037	23,586,412	4.9	24,057,431	21,901,993	9.9	27,355,801	28,409,992	-3.7	-2,413,764	-4,823,580	...
Continental	15,052,277	13,570,967	10.0	13,957,871	12,674,375	10.1	13,929,903	12,759,486	9.2	1,122,374	811,481	38.3
Delta	39,347,826	30,193,526	30.3	36,706,699	27,710,389	32.5	34,597,039	29,210,352	18.4	4,750,787	983,174	383.2
Eastern	64,205,368	70,823,480	-9.3	59,494,376	66,040,737	-9.9	69,721,132	70,438,468	-1.0	-5,515,764	385,012	...
National	17,366,626	19,241,347	-9.7	15,705,704	17,626,388	-10.9	17,997,960	19,909,638	-9.6	-631,334	-668,291	...
Northeast	13,419,069	9,294,641	44.4	12,606,284	8,659,873	45.4	14,197,464	10,486,597	35.4	-778,395	-1,191,956	...
Northwest	8,479,971	21,630,836	-60.8	5,430,465	19,018,581	-71.4	10,155,397	21,936,672	-53.7	-1,475,426	-305,836	...
Trans. World	58,378,442	61,279,842	-4.7	51,680,051	55,133,393	-6.3	65,942,427	68,700,260	-4.0	-7,563,985	-7,420,418	...
United	95,425,902	69,095,041	38.1	85,052,859	59,925,095	41.9	96,135,577	78,839,843	21.9	-709,677	-9,744,822	...
Western	10,129,092	16,211,954	-37.5	9,316,968	15,163,478	-38.6	11,323,068	14,105,080	2.0	-1,192,976	2,106,874	...
Totals	\$454,243,935	\$446,222,331	1.8	\$409,604,685	\$403,480,525	1.5	\$472,130,720	\$467,905,710	0.9	-\$17,886,785	-\$21,683,379	...
INTERNATIONAL												
American	\$ 1,457,156	\$ 1,991,651	-26.8	\$ 1,189,909	\$ 1,760,082	-32.4	\$ 1,801,711	\$ 1,797,847	0.2	-\$344,555	\$ 193,804	...
Braniif	2,680,218	2,058,187	30.2	2,317,057	1,747,545	32.6	3,131,676	2,536,958	23.4	-451,458	-478,771	...
Caribair	1,023,324	939,818	8.9	928,821	867,447	7.1	861,747	787,119	9.5	161,577	152,699	5.8
Delta	432,926	893,704	-51.6	385,357	808,238	52.3	734,400	1,146,114	35.9	-301,474	-252,410	...
Eastern, Overseas	8,428,539	6,467,303	30.3	7,860,892	6,049,037	29.9	8,098,941	6,246,633	29.7	329,598	220,670	49.4
San Juan	5,942,896	4,707,608	26.2	5,483,427	4,391,161	24.9	6,266,013	4,565,704	37.2	-323,117	141,904	...
Bermuda	259,490	317,043	-18.1	235,046	239,749	19.9	323,965	355,200	8.8	-64,475	-38,165	...
Mexico	2,226,153	1,442,652	54.3	2,142,419	1,364,127	57.1	1,508,963	1,325,721	13.8	717,190	116,931	513.3
Mackey	565,411	592,331	...	528,316	572,612	...	506,689	541,766	50.722	50,565
National	59,863	434,918	-86.2	56,001	374,544	-85.0	110,512	552,232	-80.0	-50,649	-117,314	...
Northwest	6,513,310	8,093,079	-19.5	3,540,792	4,963,033	-28.7	5,785,154	9,016,189	-35.8	728,156	-923,110	...
Panagra	5,118,013	4,771,978	7.3	3,775,898	3,625,504	4.1	5,555,694	4,926,624	12.8	-437,681	-154,646	...
Pan American, System	87,278,101	85,657,812	1.9	62,657,386	67,147,111	-6.7	98,490,589	88,347,115	11.5	-11,212,488	-2,689,303	...
Non-divisional	—	—	—	—	—	—	20,730	—	—	-8,436	-20,744	...
Latin American	23,332,665	26,145,476	-10.8	18,278,284	20,686,467	-11.6	26,513,655	28,346,160	6.5	-3,180,990	-2,200,684	...
Atlantic	34,243,368	33,807,486	1.3	24,788,655	26,185,019	-5.3	43,678,359	34,355,444	27.1	-9,414,991	-547,958	...
Pacific	28,774,641	24,853,924	15.8	18,843,096	19,574,928	-3.7	26,854,194	24,217,114	10.9	1,920,447	636,810	201.6
Alaska	907,441	850,926	6.6	747,351	700,697	6.7	1,423,651	1,435,233	0.8	-516,210	-584,307	...
Trans. Caribbean	Not Available	Not Available	—	Not Available	Not Available	—	Not Available	Not Available	—	NA	NA	...
Trans World	12,546,296	14,739,815	-14.9	7,779,930	10,506,712	-25.9	17,894,394	17,000,134	5.3	-5,348,096	-2,260,319	...
United	5,126,967	3,097,136	65.5	4,664,007	2,815,422	65.7	3,841,221	2,779,027	30.2	1,285,746	318,109	304.2
Western	679,462	1,317,011	-48.4	640,513	1,264,744	-49.4	961,939	1,104,960	12.9	-282,477	-212,051	...
Totals	\$131,909,586	\$130,462,412	1.1	\$ 96,324,879	\$101,929,419	-5.5	\$147,774,667	\$136,240,952	8.5	-\$15,865,081	-\$5,778,540	...
LOCAL SERVICE												
Allegheny	\$ 4,270,427	\$ 2,431,392	75.6	\$ 2,514,108	\$ 1,441,882	74.4	\$ 4,883,227	\$ 3,099,225	57.6	-\$612,800	-\$667,833	...
Bonanza	2,281,829	1,761,723	29.5	1,429,873	1,115,567	28.2	1,917,409	1,812,382	5.8	364,420	-50,659	...
Central	1,485,625	1,257,919	18.1	634,449	510,965	24.2	1,491,045	1,432,596	4.1	-5,420	-174,677	...
Frontier	3,482,603	3,038,471	14.6	1,756,521	1,347,474	30.4	3,321,695	3,386,844	-1.9	160,908	-348,373	...
Lake Central	1,783,101	1,088,303	63.8	917,064	599,201	53.0	1,768,103	1,179,907	49.9	14,998	-91,604	...
Mohawk	3,811,722	2,203,963	72.9	2,542,978	1,615,384	57.4	3,762,237	2,771,943	35.7	49,485	-567,980	...
North Central	5,796,874	4,349,624	33.3	3,506,732	2,680,129	30.8	5,899,867	5,046,497	16.4	-102,993	-716,873	...
Ozark	3,149,272	2,503,223	26.6	1,865,709	1,523,419	22.5	3,055,552	3,071,287	-0.5	113,720	-548,044	...
Pacific	2,611,046	2,198,825	18.7	1,406,112	1,398,229	0.6	2,502,003	2,899,554	-13.7	109,043	-700,729	...
Piedmont	2,799,270	2,464,529	13.6	1,602,976	1,345,866	19.1	2,955,171	2,929,232	0.9	-155,901	-444,703	...
Southern	2,370,578	1,601,276	48.0	1,234,132	835,532	44.6	2,416,109	1,845,157	29.5	-45,531	-263,881	...
Trans-Texas	2,217,209	1,948,472	13.8	1,230,539	1,074,607	14.5	2,194,040	2,076,070	5.7	23,149	-127,598	...
West Coast	3,044,246	2,383,197	27.7	1,634,584	1,374,676	18.9	2,761,103	2,827,493	-2.3	283,143	-444,296	...
Totals	\$ 39,123,802	\$ 29,230,917	33.8	\$ 22,275,777	\$ 16,880,951	31.9	\$ 38,927,581	\$ 34,418,187	13.1	\$ 196,221	-\$5,187,270	...
HELICOPTERS												
Chicago	\$ 747,761	\$ 716,392	4.4	\$ 349,729	\$ 379,392	-7.8	\$ 847,101	\$ 748,541	13.2	-\$99,340	-\$32,149	...
Los Angeles	399,208	358,560	11.3	56,768	48,898	16.1	385,110	344,035	11.9	14,098	14,525	-2.9
New York	838,763	795,167	5.5	230,248	212,688	8.3	932,895	807,540	15.5	-94,132	-12,373	...
Totals	\$ 1,985,732	\$ 1,870,119	6.2	\$ 636,745	\$ 640,978	-0.7	\$ 2,165,106	\$ 1,900,116	13.9	-\$179,374	-\$29,997	...
INTRA HAWAII												
Aloha	\$ 1,155,378	\$ 1,056,820	9.3	\$ 1,043,045	\$ 964,281	8.2	\$ 1,242,324	\$ 1,100,128	12.9	-\$86,946	-\$43,308	...
Hawaiian	1,888,217	2,140,285	-11.8	1,325,021	1,409,050	-6.0	2,120,172	2,264,540	-6.4	231,955	-124,255	...
Totals	\$ 3,043,595	\$ 3,197,105	-4.8	\$ 2,348,066	\$ 2,373,331	-0.2	\$ 3,362,496	\$ 3,364,668	-0.1	-\$318,901	-\$167,563	...
ALASKA												
Aleka	\$ 2,129,230	\$ 1,923,407	10.7	\$ 585,665	\$ 470,972	24.4	\$ 2,098,839	\$ 1,964,924	6.8	\$ 30,391	-\$41,517	...
Aleka Coastal	47,9342	438,278	9.4	178,402	171,002	4.3	488,309	510,892	-4.4	-9,047	-72,614	...
Con lava	292,011	282,860	3.2	30,487	27,804	9.6	286,045	306,871	12.7	23,966	-24,011	...
Elli	261,840	296,935	-11.8	102,076	128,056	-20.3	334,327	299,121	11.8	-72,487	-2,186	...
No. Consolidated	702,956	685,346	2.6	156,240	132,335	18.1	771,265	707,260	9.0	-68,309	-21,914	...
Pac. Northern	2,694,764	2,148,186	25.4	1,461,380	1,053,321	38.7	2,774,454	2,592,771	7.0	-79,690	-444,585	...
Ree.	601,500	598,496	0.5	330,501	306,372	7.9	550,028	541,494	1.6	51,472	57,002	-9.7
Wit.	956,840	1,176,306	-18.7	134,057	145,019	-7.6	978,049	1,054,364	-7.2	-21,229	121,942	...
Totals	\$ 8,118,483	\$ 7,549,814	-7.5	\$ 2,978,808	\$ 2,434,881	22.3	\$ 8,263,416	\$ 7,977,697	3.6	-\$144,933	-\$427,883	...
Cargo Revenues												
Charter Revenues			Total Operating Revenues			Total Operating Expenses			Operating Profit or Loss			
1961	1960	Change	1961	1960	Change	1961	1960	Change	1961	1960	Change	1961
AA CO	\$ 2,542,869	\$ 2,327,866	—	\$ 43,400	\$ 106,722	-59.8	\$ 63,015	\$ 2,200,819	-97.1	\$ 43,707	\$ 348,100	-87.4
Fly 3 Tiger	2,701,550	3,327,866	-18.8	3,657,043	2,460,428	48.6	6,417,749</					

News of Local Service Airlines

Texaco offers this series of informative bulletins in recognition of the vital new dimensions being added to business activity by Local Service Airlines. Texaco Inc., Aviation Sales Department, 135 East 42nd St., New York 17, N.Y.

Texaco tells business and government leaders about the vital contribution of local airlines to American business activity through regular ads like this in **Business Week**.

This new campaign reports on ways to use local carriers to increase sales, reduce costs, solve problems, plan promotions, or relax.

Texaco is proud of its close association with the progressive airline industry.

Roster of local service airlines

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Alaska Coastal
Allegheny
Aloha
Bonanza
Caribair
Central
Cordova
Ellis
Frontier
Lake Central
Mohawk
North Central
Northern Consolidated
Ozark
Pacific
Piedmont
Reeve Aleutian
Southern
Trans-Texas
West Coast
Wien Alaska

Reindeer take to the sky ... on F-27. Reindeer can fly — Northern Consolidated Airlines prove it. Last November, the line transported 43 live reindeer on the first lap of their journey from Nunivak Island, Alaska, to Los Angeles. Some of Santa's helpers seemed a bit startled by this new experience, but all arrived live and kicking.

This goes to prove that local carriers can transport almost anything — safely and quickly. In the words of a local carrier sales representative, "If it's transportable, we'll find a way to take it."

Foreign tourists may favor smaller U.S. communities. Backed by vigorous promotion by the Federal Government and growing prosperity abroad, foreign tourism to the U.S. could as much as quadruple in the next decade.

Smaller communities offer many unique attractions to the foreign visitor ... local color, historical points of interest, plus generally lower prices for accommodations. Judicious planning, in conjunction with local airline service, could enable these communities to capture a big share of the foreign tourist trade.

For example, a vacation trip for the foreign visitor might include historical homes, cities, and battlefields of the Middle Atlantic states — accessible through Piedmont Airlines. For a glimpse of America at its flamboyant best, he might visit such places as Las Vegas, Reno and Palm Springs on all-jetprop Bonanza Airlines flights.

Many local service airlines already offer "package" vacation tours to points of interest in their territories.

Bootstrap operation rebuilds economy of twin Illinois cities. When civic leaders of Merion-Herrin, Illinois, launched an all-out campaign back in 1943 to attract new industry, they gave air transportation top priority. A new multi-million dollar airport made the area readily accessible via Ozark Airlines.

Since then, no less than 50 new industries have moved into the area. Nearly 5,000 new jobs have been created. Air service has made an important contribution to this spectacular growth and has more than kept pace with the area's booming economy. Every month, Ozark flies an average of 600 passengers and 25,588 pounds of cargo in and out of Merion-Herrin.

Commuter-type, no-reservation service speeds businessmen in a hurry. Fast, frequent, commuter-type flights offered by many local carriers are made-to-order for businessmen who want to get around. Because of these flights, it is now possible to visit as many as four cities — hundreds of miles apart — in a single day.

Allegheny Airlines offers an exceptionally convenient commuter service. Reservations and baggage check-ins are unnecessary between such key cities as Pittsburgh, Philadelphia, Providence and Boston. Even ticketing is done in flight. Best of all, fare discounts average 35%.

Frontier Airlines schedules twice-daily commuter-type flights to most major cities in the Denver area. And North Central Airlines flights connect Chicago many times daily with such cities as Milwaukee, Detroit, Duluth and Minneapolis.

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U.S. Airline Traffic—January/April 1961 vs. 1960

This complete summary compiled by AIRLIFT Magazine from official CAB data

1961 to Date

Month of April

	Revenue Passenger Miles (000)		Revenue Passengers (000)		Revenue Passenger Miles (000)		Revenue Passengers (000)			
	1961	% Change	1961	% Change	1961	1960	% Change	1961	1960	% Change
DOMESTIC										
United	1,862,779	29.4	2,589	21.4	478,297	410,678	16.5	678	598	13.4
American	1,750,952	-8.8	2,256	-12.8	491,427	509,229	-3.5	630	699	-9.9
Eastern	1,348,316	-11.3	2,438	-11.1	372,504	397,767	-4.4	692	727	-4.8
TWA	1,205,526	-10.8	1,389	-11.6	338,143	364,183	-7.2	394	428	-7.9
Delta	745,216	22.7	1,255	16.6	192,849	165,161	16.8	326	289	12.8
Capital	486,130	-1.0	1,094	-4.8	122,625	143,576	-14.6	280	333	-15.9
National	354,230	-15.5	544	-0.8	94,904	111,216	-14.7	150	158	-5.1
Braniff	335,573	1.1	728	0.6	85,399	88,910	-3.9	186	189	-1.6
Continental	284,990	6.4	430	4.4	70,845	68,517	3.4	111	108	2.8
Northeast	272,701	32.0	548	26.0	76,924	55,523	38.5	159	124	28.2
Western	192,980	-39.1	328	-42.7	50,816	73,810	-31.2	87	138	-36.9
Northwest	174,007	-61.9	237	-60.9	84,112	112,635	-25.3	121	156	-22.4
Total	9,013,400	-3.4	13,836	-5.2	2,458,865	2,501,205	-1.7	3,814	3,947	-3.4
INTERNATIONAL										
Pan American System	1,535,434	7.1	916	0.8	444,599	385,164	15.4	263	250	5.2
Latin American	414,243	-14.0	341	-17.0	104,161	109,264	-5.8	85	93	-8.6
Atlantic	536,287	7.3	414	16.0	163,086	154,787	5.4	131	119	10.1
Pacific	549,083	30.3	146	16.8	171,016	115,930	47.5	43	33	30.3
Alaska	15,951	1.1	15	-6.3	4,336	5,191	-16.5	4	5	-20.0
Eastern Overseas	266,224	28.2	173	22.7	70,724	54,451	24.8	47	39	20.5
San Juan	211,289	22.3	138	22.1	55,600	46,958	18.4	36	31	16.1
Bermuda	7,023	-14.8	8	-27.3	3,190	3,622	-11.9	4	4	-25.0
Mexico	47,912	79.8	27	58.8	11,934	6,071	96.6	7	4	75.0
Trans World	188,774	-17.2	68	-12.8	60,847	78,868	-22.8	21	28	-25.0
United	115,448	39.8	46	39.4	30,261	29,282	3.3	12	12	..
Northwest	77,755	-26.0	39	-33.9	25,900	27,918	-7.2	14	15	-6.7
Panagra	69,734	10.7	40	-4.8	18,183	13,765	32.1	10	10	..
Braniff	45,049	34.3	30	66.7	10,324	9,930	4.0	7	5	40.0
American	31,387	-30.9	29	-32.6	8,222	10,352	-20.6	7	10	-30.0
Western	15,518	-48.8	10	-50.0	3,594	7,337	-51.0	2	5	-40.0
Caribair	10,640	11.5	149	10.4	2,802	2,379	17.8	41	34	20.6
Mackey	8,664	-9.0	50	-3.8	2,480	2,288	8.4	15	14	7.1
Delta	6,760	-47.6	4	-60.0	1,739	3,459	-49.7	1	3	-46.7
National	845	-89.8	2	-81.8	13	1,802	-99.3	..	2	-100.0
Trans Caribbean	NA	NA	NA	NA	NA	NA	..	NA	NA	..
Total	2,372,672	4.5	1,556	0.3	679,688	629,196	8.0	440	427	3.0
LOCAL SERVICE										
North Central	56,980	11.3	312	6.5	13,955	13,662	2.1	78	79	-1.3
Allegheny	47,487	55.2	228	37.3	14,251	10,463	36.2	68	55	23.6
Mohawk	43,227	45.0	215	42.4	11,637	8,496	37.0	59	42	40.5
Pacific	34,663	-1.9	147	-4.5	9,269	9,785	-5.3	40	42	-4.8
Ozark	31,793	9.2	175	6.1	8,403	8,480	-0.9	47	48	-2.1
Frontier	31,675	17.8	115	11.7	7,798	7,302	6.8	30	28	7.1
West Coast	30,222	3.8	120	-3.2	7,307	7,647	-4.4	30	33	-9.1
Piedmont	28,822	6.3	136	5.4	8,986	8,183	9.8	43	40	1.1
Bonanza	25,883	16.8	101	13.5	6,520	5,787	12.7	26	23	13.0
Trans Texas	22,982	3.8	99	4.2	6,286	6,192	1.5	27	27	..
Southern	21,312	26.9	117	25.8	5,793	4,979	16.3	32	28	14.3
Lake Central	16,008	41.7	102	39.7	5,103	3,164	61.3	32	20	60.0
Central	12,026	21.8	40	17.6	3,733	2,742	36.1	19	15	24.6
Total	403,080	1.2	1,927	14.3	109,041	96,882	12.5	531	480	10.6
HELICOPTERS										
Chicago	1,337	-15.5	81	-12.9	346	477	-27.5	21	28	-25.0
New York	966	10.7	44	2.3	205	270	-5.6	13	14	-7.1
Los Angeles	488	17.9	14	55.5	136	116	17.2	4	3	33.3
Total	2,791	-2.7	139	-4.1	767	843	-11.1	38	45	-15.6
INTO HAWAII										
Hawaiian	21,182	-33.9	132	-15.9	5,281	9,219	-42.7	36	43	-16.3
Aloha	15,023	-5.6	102	...	3,739	4,264	-12.3	26	29	-10.3
Total	36,205	-24.5	234	-9.7	9,020	13,483	-33.1	62	72	-13.9
ALASKA										
Pacific Northern	31,353	30.9	28	17.9	7,436	6,932	7.3	8	8	..
Alaska	30,931	-6.9	38	-15.8	7,662	8,071	-5.1	8	10	-20.0
Reeve	4,017	-4.2	5	-20.0	1,037	1,378	-24.7	2	2	-50.0
Nor. Consolidated	1,969	-6.0	7	-14.3	555	694	-20.0	2	2	33.3
Wien	1,923	-10.6	8	...	571	679	-15.9	2	3	..
Alaska Coastal	1,446	2.3	13	7.7	396	407	-2.7	4	4	..
Cordova	953	-10.7	5	...	282	341	-17.3	1	1	..
Ellis	847	-10.5	15	-6.7	308	277	11.2	5	5	..
Total	73,439	6.4	119	-2.5	18,247	18,779	-2.9	31	35	-11.4
ALL CARGO										
Freight										
	1961	1960	% Change	1961	1960	% Change	1961	1960	% Change	
Aeroflot	144,924	499,251	-71.0	144,924	499,251	-71.0	198,376	532,910	-62.8	
Aeroflot Sud	5,332,792	6,407,409	-16.8	5,405,361	6,636,122	-18.5	11,705,854	14,874,700	-19.9	
Riddle	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Seaboard World	3,172,927	1,468,946	116.0	4,152,734	2,031,299	104.4	6,178,103	4,913,923	25.7	
Slick	NA	NA	NA	NA	NA	NA	3,464,494	8,095,335	-61.1	
Total	8,650,643	8,375,606	3.3	9,703,019	9,166,672	5.9	21,746,827	29,214,868	25.6	



ENGINEERING/OPERATIONS

Hortons' Goal: Luxury Airline Interiors

There's one airline that's reversing the trend from first-class to coach.

Loide Aereo Nacional, Brazilian domestic carrier, is ripping austere furnishings out of four DC-6As and is installing low-density, luxury VIP interiors. A private lounge for eight will be available in the rear. There will be flushing toilets, now found only on jets. In the galley will be a safe for passengers' valuables.

Loide, which now offers only coach service with DC-4s and C-46s, will charge first-class fares. Until recently, the DC-6As have been leased to Panair do Brasil.

Conversion work is being done by Horton & Horton, which specializes in interiors, and its sister company, Inter-

America Aviation Modification Center, which handles airframe, maintenance and modification work. Both are located at Meacham Field, Ft. Worth, Tex.

The 60 passenger seats in the DC-6As are done in three different colors, dividing the cabin into three "visual zones." Lavatories and two galleys are located forward to make the passenger cabin more spacious. The rear lounge contains four seats and the area can be curtained for privacy. If more than four seats are needed, the two aftmost double passenger seats can be reversed. Conversion cost is under \$100,000 per aircraft.

Horton & Horton, a company started by Bill Horton and his wife, Dorthie Anne, has been doing aircraft interiors

since the early 1950s. Their work has been primarily in the executive aircraft field, but the Hortons hope that the Loide contract may be the forerunner of more business from carriers.

When the Hortons started in business, they were designing seats for heavy industrial equipment—trucks, earth movers, etc.—and finally got into the aircraft field "by demand," says Dorthie Anne Horton. They have done several hundred Aero Commander interiors, and a large number of corporate F-27s, Gulfstreams, Bell helicopters, and other models. F-27 customers, for example, include the Bank of Mexico, Ideal Cement, Kimberly-Clark, Westinghouse and Champion Spark Plug. They are approaching the 2,000 mark on in-

Jet Airport Status Report*

Passenger jet service has spread rapidly around the United States since the introduction of jets late in 1958, an *AIRLIFT* study shows.

In June, 1959, jets were flying into only six major air terminals: Baltimore, Boston, Chicago, Los Angeles, New York and San Francisco. Two years later, on May 1, 1961, a tally showed 47 airports receiving jet service. And, by 1966, according to present projections, the total will grow to 114.

Airports Receiving Turbojet Service—May 1, 1961:

Albuquerque, N.M.

Anchorage, Alaska

Atlanta, Ga.

Baltimore, Md.

Boston, Mass.

Chicago, Ill., (O'Hare)

Cincinnati, O.

Cleveland, O.

Dallas, Tex.

Dayton, O.

Denver, Colo.

Detroit, Mich., (Metropolitan)

Detroit (Willow Run)

El Paso, Tex.

Fairbanks, Alaska

Ft. Lauderdale, Fla.

Ft. Worth, Tex.

Honolulu, Hawaii

Houston, Tex.

Indianapolis, Ind.

Jacksonville, Fla.

Kansas City, Mo.

Las Vegas, Nev.

Los Angeles, Calif.

Memphis, Tenn.

Miami, Fla.

Minneapolis, Minn.
New Orleans, La.
New York (Idlewild)
Oklahoma City, Okla.
Omaha, Neb.
Philadelphia, Pa.
Phoenix, Ariz.
Pittsburgh, Pa.
Portland, Ore.
Salt Lake City, Utah
San Antonio, Tex.
San Diego, Calif.
San Francisco, Calif.
San Juan, Puerto Rico
Seattle, Wash.
St. Louis, Mo.
Tampa, Fla.
Tucson, Ariz.
Tulsa, Okla.
West Palm Beach, Fla.
Windsor Locks, Conn.

Airports Expecting Turbojet Service

	Date Expected
Akron-Canton, O.	1962
Albany, N.Y.	1966
Allentown, Pa.	1966
Amarillo, Tex.	1962
Annette, Alaska	1961
Birmingham, Ala.	1961
Boise, Idaho	1961
Buffalo, N.Y.	1961
Cedar Rapids, Iowa	1961
Charleston, S.C.	1964
Charlotte, N.C.	1964
Chattanooga, Tenn.	1964
Chicago (Midway)	1964
Cold Bay, Alaska	1961
Colorado Springs, Colo.	1963
Columbia, S.C.	1964
Columbus, Ohio	1962
Cordova, Alaska	1962
Des Moines, Iowa	1961
Eugene, Ore.	1966
Ft. Wayne, Ind.	1964
Fresno, Calif.	1966

Greensboro-High Point, N.C.	1964
Greenville-Spartanburg, S.C.	1964
Gustavus, Alaska	1966
Hilo, Hawaii	1962
Houston (new airport)	1966
Jackson, Miss.	1963
Jacksonville, Fla. (new airport)	1966
Juneau, Alaska	1961
Kansas City (Mid-Continent Airport)	1963
Kodiak, Alaska	1962
Los Angeles (new airport)	1966
Louisville, Ky.	1962
Lubbock, Tex.	1963
Medford, Ore.	1966
Midland, Tex.	1963
Milwaukee, Wisc.	1964
Mobile, Ala.	1964
Moline, Ill.	1966
Nashville, Tenn.	1961
New York (LaGuardia)	1964
Oakland, Calif.	1965
Orlando, Fla.	1961
Pendleton, Ore.	1962
Providence, R.I.	1964
Raleigh-Durham, N.C.	1964
Reno, Nev.	1965
Richmond, Va.	1962
Rochester, N.Y.	1966
Sacramento, Calif.	1962
(new airport)	1966
San Diego, Calif. (new airport)	1966
Shemya I., Alaska	1963
Sitka, Alaska	1964
South Bend, Ind.	1964
Spokane, Wash.	1961
St. Petersburg, Fla.	1964
Stockton, Calif.	1966
Syracuse, N.Y.	1966
Terre Haute, Ind.	1964
Toledo, Ohio	1962
Washington, D.C. (Dulles)	1962
Wichita, Kan.	1963
Yakutat, Alaska	1962
Youngstown, O.	1964

*Source: *AIRLIFT* Research.



LOUNGE DECOR suggests plush appointments provided by Horton and Horton for Loide Aereo Nacional's DC-6As.

teriors, and this part of their business will top \$1 million this year.

Some idea of the extent of the Hortons' business can be seen from a partial list of companies supplying equipment for the Loide job. Naughahyde, used on sidewalls, armrests and in the lounge, plus the mahogany wood-curl on bulkheads, comes from U.S. Rubber. Flushing toilets are from Monogram Precision Industries, Culver City, Calif.; Permacel aluminum foil

insulation from Johnson & Johnson, New Brunswick, N.J.; formica from Formica Corp., subsidiary of American Cyanamid, Cincinnati.

Other suppliers: gold trim, Columbus Coated Fabrics, Englewood, N.J.; aisle runner, from a division of Burlington Industries, Minneapolis; saran drapery material, Payne & Co., Dayton, Ohio; floor covering, Duracote Corp., Ravenna, Ohio; galley equipment, Mapco, Mansfield, Ohio; foam, American La-



LOOKING AFT, four-abreast seating gives hint to low-density approach featured in all first-class interiors.

tex, Hawthorne, Calif.; track and seat fittings, General Logistics Div. of Aeroquip Corp., Los Angeles; call buttons, Hetherington Co., Folcroft, Pa.; door locks, Adams-Rite, Glendale, Calif.; adhesives, Minnesota Mining and Mfg. Co., St. Paul, Minn.; oxygen fittings, Zep Aero, El Segundo, Calif.; seat belts, Air Associates, Teterboro, N.J.; seat fabric, Stroheim & Roman, New York; fiber glass, H. I. Thompson Fiber Glass Co., Los Angeles. ■

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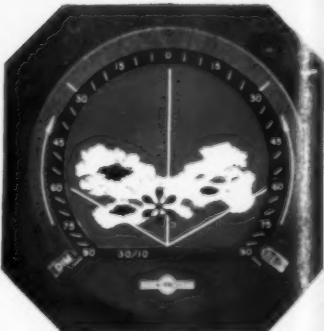
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COLLINS WEATHER RADAR presents a complete picture of the weather ahead, showing the smoothest route through or around storms. Not restricted by "tunnel vision," it scans a broad 120° sector of the sky (360° with 30° antenna), with ranges up to 150 miles ahead.

The WP-103 X-Band Radar weighs only 48.8 pounds—the result of a new design with extensive transistorization. It features a 12°, 18° or 30° stabilized antenna providing a clearly defined picture on the indicator, regardless of aircraft pitch and roll. For hoodless, daylight viewing, a bright tube indicator is available. Write for a detailed brochure.

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'Flasher' and 'Thumper' Cockpit Alarm

Versatile concept adopted by Pan American promises 'single system' approach to warning instrumentation

By PHIL GERACI

A cockpit warning system supplying both visible and audible warnings which would supplement the flag alarms on navigation systems has been developed by Pan American engineers and is now being manufactured by Gables Engineering, Coral Gables, Fla. Pan American has ordered warning systems in a quantity sufficient to equip all jet aircraft in its fleet (55 aircraft, a total of 70 systems including spares.)

The idea of providing a supplement to the standard flag-warning systems in navigation instruments (particularly instruments such as the glide slope, which are turned off during a major portion of each flight) has been debated for some time. Although many schemes have been tried and discarded, the Gables/Pan Am approach is the first to be adopted by an airline on a definitive basis.

In addition to Pan Am, SAS also has scheduled an evaluation of the unit.

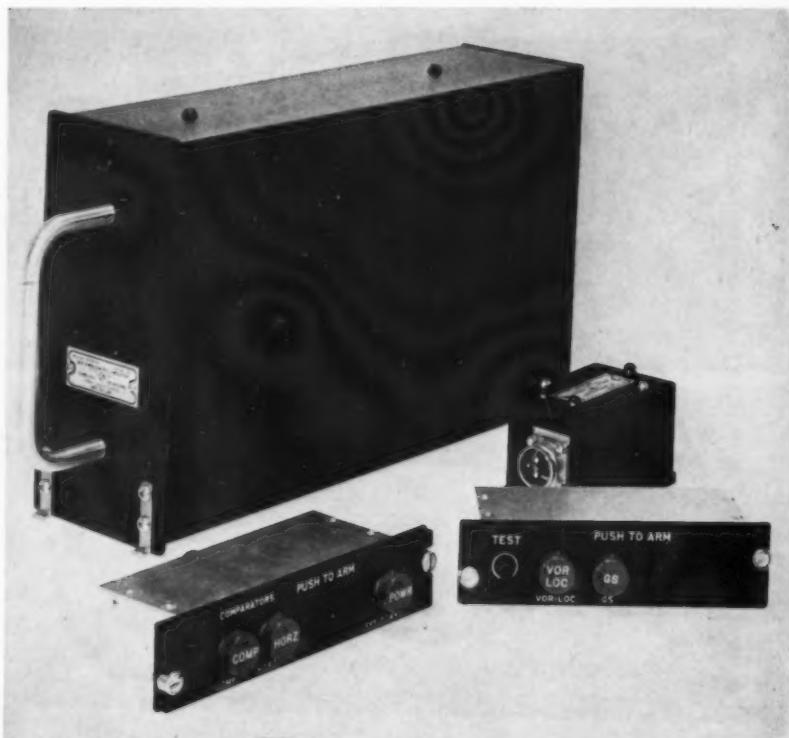
Design sparked by PAA

The operational requirement originated at Pan American, and Gables engineers developed the circuits. After approximately five months of flight evaluation, PAA secured supplemental type certificates necessary to adapt the system to its jets.

The device provides both a visible warning (actually two visible warnings: a flashing white light and a glowing red light which indicates which instrument is not functioning properly) and an audible "thumping." Once the pilot's attention has been attracted, he can deactivate the flasher and thumper, although the glowing warning remains on until the defect has been corrected.

Designated Model G-1010A Navigation Warning System, the Gables equipment functions from the same signal which initiates the flag warning in the individual instruments. But the 1010A provides an integrated display (centrally located below the instrument panel in the PAA installations) with a series of horizontally positioned red light/switch buttons.

Pressing the buttons arms the system, whereas pulling a button out after



NAVIGATION WARNING system marketed by Gables Engineering, Inc., consists of amplifier package, in $\frac{3}{8}$ ATR short case, plus variety of annunciator panels.

it glows (indicating a failure) causes the flasher to cease, although the button remains lighted until the defect has been corrected. An annunciator also is provided to warn of loss of power to the instrument warning system.

Triggered by electrical deviations

The 1010A will accommodate the glide slope and integrated VOR/LOC instruments, warning in event of an electrical deviation from normal operating tolerances, and will call attention to deviations between gyro compasses and artificial horizons. The warning package is contained in a standard $\frac{3}{8}$ ATR short case, and utilizes a DPX2-40S-40S-33-0001 rear connector for wiring. The package contains all amplifiers, comparators (except compass), relays and power supply necessary for operation.

Annuiciator panels will be supplied

by Gables according to individual requirements. Pan Am has specified a Captain's panel (Model G-1080) which contains a test switch and annuiciator light/switches for VOR/LOC and glide slope receivers. The unit is $5\frac{1}{4}$ in. wide, $1\frac{1}{2}$ in. high and 2 in. deep. The Model C-1081 Comparator panel contains three light/switches labeled COMP, HORZ AND POWR. Size is $6\frac{1}{2}$ in. wide, $1\frac{3}{8}$ in. high and 2 in. deep. The First Officer's panel (Model G-1080) is the same as that provided for the Captain.

The audible warning is housed in an aluminum box measuring $3\frac{5}{32}$ by $2\frac{5}{32}$ by $2\frac{3}{32}$ in. Not supplied but required are a master warning light, which can be a single or dual-bulb nondimmable light assembly, and a compass comparator sensor which will provide a 28v. dc on-off signal at .022a.

Continued on page 50



Northrop's Laminar Flow Control will enable large aircraft to fly up to twice as far as they now can, and stay aloft proportionately longer, on the same amount of fuel. Or it will permit them to carry heavier payloads over a given distance. And it will accomplish this without increasing the airplane's size, weight, or engine power.

Laminar Flow Control is a revolutionary technique developed by Northrop for reducing friction drag on an

airplane in flight. This drag is caused by the turbulence of the boundary layer of air as it flows over the surfaces of the plane. By drawing off this turbulent air through paper-thin slots in the aircraft skin with a suction system, and exhausting it in the direction of thrust a smooth "laminar flow" of air is obtained.

The implications of Laminar Flow Control are far-reaching. To commercial operators it can mean substantial cost savings on long distance flights, and make



More sky per gallon

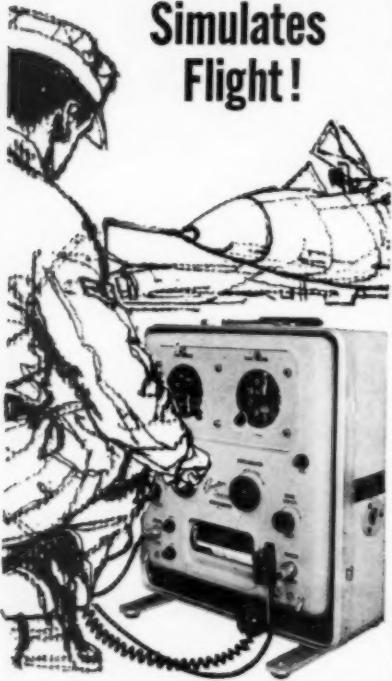
possible non-stop flights over greatly increased distances. To the military, it will be immensely important for surveillance and airborne alert missions, or for any operation requiring aircraft to stay aloft over long periods. On logistic missions, planes can fly in and out of trouble spots without refueling. Dependence on overseas bases will be reduced.

Northrop is conducting a continuing research program for the U.S. Air Force to investigate the applica-

tions of Laminar Flow Control to many kinds and phases of flight. Two airplanes are now being modified under a separate Air Force contract to demonstrate the practicability of this new aerodynamic technique in day-to-day operation.

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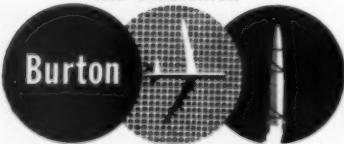
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Burton FLIGHT CALIBRATOR checks out all pressure and vacuum equipment...

In pre-flight or maintenance applications, one man with this one portable unit, the new Burton Pitot-Static Tester, can check out and calibrate all pressure and vacuum equipment on high performance aircraft with precision and accuracy. In-flight conditions encountered by precision instruments are reproduced with high accuracy and repeatability in these ranges: Altitude, -1000 to +80,000 feet; airspeed, 0-850 knots; Mach number, .3 to 2.2. Built-in automatic safety features prevent damage to critical instruments; use of dry pump prevents oil contamination. Portable case contains precision aircraft instruments, pressure and vacuum pump, valves, regulators, hoses, electrical cable; weighs 60 pounds total. Unit operates on 115 vac, single phase, with automatic selection of 50/60 or 400 cycles.

FOR PRECISION CHECKOUT
AND CALIBRATION



BURTON INSTRUMENTS
division of BURTON MFG. CO.
8910 Winnetka Ave.
Northridge, California

Continued from page 47

Power required is 115v, 400 cycle, single phase. A small amount of 28v dc power also is required for operation of the test circuit and to indicate loss of ac power. Isolation is provided so that a component failure will affect only the circuit in which it is used.

Interlock relays are provided to keep the warning lights from glowing in the VOR/ILS and glide slope buttons if the receivers are turned off, or if the VOR/LOC receivers are tuned to other than an ILS channel. An electrical dimming circuit also is provided.

The future looks bright for this new concept in cockpit warning. Airline engineers see it as a long-sought replacement for the multitude of bells, flags and lights which most airlines operate with today. The versatility of the Gables warning system is such that it can be tied to virtually any cockpit instrument which provides the right kind of electrical output.

In airborne instrumentation, the Gables system offers promise of simplicity and flexibility where the requirements call for comparison between two identical systems or the measurement of minute changes in electrical system levels. ■

EAEC Seeks Reliability Hike in New Equipment

The European Airlines Electronics Committee, which met in Brussels in May, is awaiting results of U.S. AEEC deliberations on a number of equipment considerations before taking action to establish standards for European airlines.

For example, EAEC has recommended that AEEC discuss the matter of MTBF (mean time between failure) figure as a measure of equipment reliability. Committee members hoped that such a figure would provide a standard for judging proposed packaging and design of new instruments.

EAEC also was interested in AEEC's VHF NAV and COM equipment projects, and in application of solid state techniques to new equipment now under development. The Committee felt, however, that size reduction was less vital than improvement in reliability, and that space gained by use of new techniques could be devoted to additional circuits for checking or measuring purposes.

AEEC Meeting Change

The Airlines Electronic Engineering Committee, which originally was to have met last month at Miami Beach, has changed its meeting date to July 20 and 21 and the location of its meeting from the Saxony Hotel to the Eden Roc, 47th and Collins Ave., in Miami Beach.

In other matters, EAEC took the following action:

- Supported the use of solid state techniques, provided the result is greater reliability and general reduction in operating cost, without degradation of operational performance;

- Agreed that the two-out-of-five binary scheme for frequency selection should be supported because of its potential for flexibility and future use;

- Saw no need for communications frequencies above 136 mc for civil purposes, but would not object to channels up to 152 mc if required for military if effect on reliability and cost of basic 118-136 mc unit was negligible;

- Felt that provision for 25 KC channel spacing should be made only in event of strong evidence indicating a later requirement;

- Expressed a preference for continued use of centralized cooling to avoid problems caused by integral blowers;

- Advocated soldering in of transistors provided design protected transistors from excessive heat and voltage transients;

- Strongly recommended addition of checking devices to new designs, to aid in location of faulty components;

- Expressed continued interest in simplified DME based on new designs;

- Called for reports on airline experience with doppler radar and ATC transponders to be made a part of the European Maintenance Meeting on Electronic Equipment;

- Sought additional information on Gables Engineering's master warning system for navigation instruments (see above).

Para-Visual Director Under Test by KLM

KLM is installing a Para-Visual Director developed by Smiths Aviation Division in one of its DC-8s. This instrument is part of the automatic landing equipment under development by the British government and various manufacturers. KLM will use the new instrument only on training flights.

KLM says that the principal motive for the development of the Para-Visual Director was twofold. At present commercial aircraft use the Instrument Landing System (ILS) when visibility is poor.

At some point during an ILS landing, however, the pilot has to switch over from instrument to visual flying. He does this in co-operation with his co-pilot and the para-visual director facilitates his task in this respect. It was so deemed necessary to have an extra control device for the future when fully automatic landings become normal procedure. ■

Checking the Circuit

• **Distance measuring equipment** manufactured by Federal Telephone and Radio Co. has been installed on all of American Airlines' 49 jet transports. Total cost of the installations thus far has been \$294,000. Units cost approximately \$6000 each. Future jets also will be DME-equipped.

• **Increased use of radar beacon** seems likely at present. Inclusion of altitude-measuring capability in transponders, already anticipated by some manufacturers (*AIRLIFT*, April, p. 53) may circumvent need for 3-D radar in terminal area control, according to FAA spokesmen. Another possibility: addition of aircraft-to-aircraft circuitry in the transponder to add collision avoidance to the black box which seems destined to become a catch-all for aircraft separation needs.

• **Maxson air height surveillance radar** installed at NAFEC may be the only one ever built to provide terminal-area data on vertical separation. Prototype installation planned for the New York area has been scrapped. According to FAA, "nothing could be gained by such an installation."

R&D chief Joseph D. Blatt asserted that "until we are assured of how the information will be used, there is no benefit to another prototype in the New York area." Thus far, Blatt indicated, tests of the Maxson system at Atlantic City have proved the electronic capacity for vertical information. But until the Hough (Project Beacon) report appears, decisions on 3-D radar, as well as many other R&D projects, must be postponed.

• **If the flying public** could be conditioned to accept the unusual sounds of compressed speech, voice compression "Vocoders" manufactured by Hughes Aircraft Co. might provide relief from spectrum crowding in the limited air-ground public radiotelephone service still under consideration for airlines. Price of Vocoder equipment is high, but four times the number of voice channels can be accommodated, in 1000-cps segments.

• **The optical maser**, an over-the-horizon development in which "coherent light" instead of radio waves is used as the transmission medium,

promises eventual relief from crowded communications by a factor greater than 10 to 1.

Demonstrating a Bell Telephone Labs. design at the opening ceremonies of the Armed Forces Communications and Electronics Association in Washington, AFCEA president Benjamin H. Oliver also indicated a radar potential whereby an optical maser's capacity for fine detail would permit aircraft to appear as definite shapes, instead of blips, on radar screens.

• **Television monitors** in Atlanta's new \$20-million terminal have been provided by Television Utilities Corp. Total of 96 "Scan-A-Graph" monitors in sizes from 14 to 27 in. have been installed for terminal-wide display of flight data. Green phosphor tube used in Scan-A-Graph units eliminates image flicker. Push-button control over six channels adds additional versatility to one of the most extensive closed-circuit terminal TV systems in air travel.

• **FAA is negotiating** with the National Aeronautical Research Institute of the Netherlands for a cockpit shield designed to reduce visibility and simulate bad weather in the cockpit. Until the device is installed, lack of bad flying weather at NAFEC is holding up testing of narrow-gauge runway lights.

Desire to get testing underway as soon as possible has prompted the agency to consider lease of shield-equipped KLM DC-3 rather than new installation in FAA's own aircraft.

Report on centerline lighting, previously a part of the overall lighting study but separated into a report of its own because of insufficient poor visibility for testing, is now in preparation.

• **Tests of Shipboard VORTAC** on the Androscoggin in the North Atlantic have disclosed expected deviations (nulls) due to height of the antenna and pitch and roll of the vessel. FAA now is investigating a "floating airdrum" concept inspired by the Coast Guard in the thirties but discarded because of prohibitive expense.

New electronic devices to stabilize the unmanned platform, redundancy of components and automatic devices to warn of equipment failure offer promise of a highly-precise

modern version which FAA officials hope would cost less in the long run than "three to five" manned shipboard stations.

• **Air France** is installing Comptometer Electrowriter message relays for reservations control between its Manhattan ticket office and Idlewild. Other airlines with Electrowriter equipment include Pan American: 70 units, in use at Idlewild; Trans-Canada: 6 units, used for flight dispatch; United: 2 units, adapted to control of air freight.

• **Tropospheric scatter network** now being installed in Europe (NATO Project Ace High) and the Army's Pacific Scatter Communication System linking Hawaii with other islands in the west Pacific may serve as guides for the Federal Aviation Agency's scatter project in the North Atlantic. U.S. terminal will be installed on Cape Cod, beginning in early 1962. Choice of European site is now under negotiation.

• **FAA continues to test** Bendix Radio's collision avoidance system at NAFEC. Equipment still is being developed by Motorola and Sperry for investigation jointly funded by FAA and the military. Three different techniques are involved: infrared, radar ground bounce and air-to-air beacon interrogation.

• **Many proposals for color** in air traffic control have been received by FAA's Bureau of Research and Development. But a deterrent factor is human variation in color perception, a factor being unearthed by the Bureau of Aviation Medicine in routine physical examinations of pilots.

• **Doppler radar** is expected to figure prominently in FAA's navigation plan for the North Atlantic. But concept of "parallel routes" to provide increased saturation across the ocean must be based on system which does not "blank out" over smooth water, as doppler now is prone to do. "Backup" VORs may provide the answer if a method can be found to anchor them firmly in heavy seas. Some answers may appear at the North Atlantic Regional Air Navigation meeting in Paris in September.



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PILOT TALK

By CAPT. E. J. BECHTOLD

'Near Miss' Reporting Has New Lease on Life

Project Scan is the name the Flight Safety Foundation has given to a nationwide "near miss" reporting program for civil and military aircraft.

While I'm sure the Administrator is not seeking bows for calling the signal on this one, it is another sign of his appreciation of more serious practical problems that the industry must tackle. Indeed, all who are responsible for getting *Project Scan* launched are on the right track.

This route has been traveled before by various segments of the industry, but no one has ever really coordinated a joint civil-military effort. Other studies reached the same conclusions — too many airplanes were coming too close together. But no one figured out why, or what could be done to prevent it. The problem is very much with us today.

The success of such a study will depend on cooperation by pilots and controllers in reporting incidents. In short, this program needs input. But herein lies a problem which must be faced realistically if this input is to be achieved in sufficient quantity to support the conclusions.

It doesn't take a long memory to recall the last effort, by the former Administrator, to gather this type of information. It started out as a voluntary reporting program under CAB, with the inducement that no "reprisal action" would be taken against individuals based on evidence contained in their own reports. But it didn't quite work out this way.

Reports trickled in

There was hopeful anticipation of minimizing if not eliminating the hazard of near misses. The reports started coming in—a trickle at first, then rather alarming numbers.

When the Act of 1958 was passed the program was taken over by the FAA. Shortly thereafter the Administrator rescinded the immunity originally granted by CAB (for some reason still not completely understood by most pilots), but did not make the fact generally known.

Unsuspecting pilots who continued to report near-misses suddenly began

to receive letters in the name of the Administrator alleging violations of the CARs. Reports from air line pilots fell off sharply when the first violation was filed and quickly dwindled to a dribble when the few disbelievers finally realized "it can happen here." This untimely "mopping-up" exercise spelled finis to what originally promised to be a worthwhile program.

No promises now

Time cures many things but the memory of this experience is still vivid. No such promises are being made this time. There will be no immunity. But this project, while under the sponsorship of FAA, will be conducted wholly independently by the Flight Safety Foundation, a non-profit organization, internationally acknowledged and dedicated to promoting safety.

The hiring of FSF for *Project Scan* was no accident. It was done with full cognizance of the problems and with the sincere hope the name Flight Safety Foundation would eliminate the stigma of reprisal action associated with the last FAA-sponsored endeavor.

To develop and encourage industry thinking on *Project Scan* the Flight Safety Foundation recently assembled representatives of the interested organizations. Heading the meeting was Jerry Lederer, managing director of FSF and Carl Schmidt, its engineering director. After clearing the air on origin, objectives, organization, and planned method of operation, the group jointly discussed details regarding type of report and format, methods of distribution, promotion, etc.

It was specifically emphasized that:

- All reports received would be held in strict confidence by FSF.

- Reports would be destroyed immediately after the information had been identified and coded.

- Results of the study would be released to FAA only in statistical form.

All connected with *Project Scan*, including the sponsor, FSF, and industry representatives, are conscious of the integrity necessary to make it successful. *Project Scan* is well motivated. It could mean survival for someone—it might be you.



ABOUT PEOPLE



VARGUS



WRIGHT



HUSKINS



WHITLOCK



HUBLEY



SAINT

IN THE AIRLINES

Ernst H. van der Beugel became president of KLM last month, succeeding **I. A. Aler**, who has reached retirement age. The new president, 43, has been with KLM since 1959. Prior to that he was Holland's Deputy Minister of Foreign Affairs.

Capt. **Roberto Lim** promoted by Philippine Air Lines to v.p.-operations, succeeding Col. **Renato Barreto**, resigned. Capt. Lim also is acting as v.p.-engineering and maintenance, taking over duties of **James Searl**, who is serving as the airline's technical representative on the U.S. west coast.

Jesus E. Vargas promoted by Mexicana from operations mgr. to technical director, in charge of all operations and maintenance. Capt. **Arturo Jimenez Nieto** becomes operations mgr.

William B. Daley promoted by TACA from treasurer to v.p. and gen. mgr.

Derek Glover, BOAC's gen. mgr. of southern routes, appointed managing director of British West Indian Airways, in order to "facilitate a closer liaison" between the two companies. He will serve for a temporary period.

D. F. Classey named gen. mgr. of Aden Airways, BOAC affiliate. He succeeds Capt. **H. W. C. Alger**, who is retiring. Classey has been secretary and commercial mgr.

Three new vice presidents elected by Northwest: **Robert J. Wright**, former gen. sales mgr., is v.p.-sales; **William E. Huskins Jr.**, asst. to the president, elected v.p.-Orient region; **Donald H. Hardesty**, treasurer, is v.p.-finance. **Paul L. Benscoter**, who has been v.p.-Orient, re-assigned to head a new transportation services dept. in St. Paul. **Frank C. Judd**'s title changed from v.p.-maintenance and station operations to v.p.-maintenance and engineering. **Benjamin G. Griggs Jr.**, director of organization and procedures, named asst. to the president.

Marvin Whitlock, senior v.p.-operations and maintenance of Capital before merger with United, elected v.p.-line maintenance of **UAL**. **R. W. Hardesty**, v.p.-operations of Capital, named asst. gen. mgr. of UAL in Washington.

Paul G. Larie promoted from treasurer to v.p. of American. **Edward J. Tucker** named controller and **William J. Corbett** treasurer.

Robert P. Hubley promoted from passenger traffic mgr. of Los Angeles Airways to v.p.-sales.

Alexander G. Hardy resigned as senior v.p. and secretary of National and was named asst. to the board chairman of Automatic Canteen Co., Chicago.

Capt. **Samuel P. Saint**, 22-year veteran with American, named director of air traffic control procedures. He has been an A/B Boeing 707 pilot, also air traffic control consultant to International Telephone

& Telegraph Laboratories. For several years he was on loan from AA to ATA and Air Navigation Development Board.

Thomas F. Huntington transferred by TWA from v.p. and executive asst. to the president to v.p.-organization and procedures. **P. G. Yovanovich**, Geneva sales mgr., named regional director of cargo sales, Paris.

J. T. Maples promoted by Delta from director of tariffs to asst. to the v.p.-traffic and sales.

Capt. **Paul Foster**, asst. v.p.-flight operations of Eastern, takes over as director of flight crew training, succeeding Capt. **Frank Kern**, who is returning to line flying. Capt. **Rudy Seymour** assumes Foster's former duties.

Richard M. O'Grady, formerly with United, named director of training for Mohawk.

V. K. Stephens, with Capital for 23 years and for the past year v.p. of a Washington travel agency, appointed Northeast's mgr. of agency and interline sales. **William J. Murphy**, former director of marketing for Capital, named New York sales mgr. of NEA. **Robert J. Wilson**, v.p. of Capital, joins the Washington firm of Patterson, Belknap and Farmer.

A. DiPasquale, asst. v.p. of American, who has been in charge of labor relations, heads a new personnel field activities and research dept. **John J. Gaherin**, v.p.-labor relations and personnel for New York, New Haven and Hartford Railroad, becomes American's director of labor relations.

Lou Boas, former international marketing director of Revell Inc., named U.S. sales promotion mgr. of KLM.

Arnold Davis promoted by Iberia to U.S. tour mgr.

Bolli Gunnarsson, Icelandic Airlines' Idlewild station mgr., named ground operations mgr. for New York and all European stations.

Thomas J. Myan, formerly with Northwest in Seattle, heads Alaska Airlines' new Chicago regional sales office.

AMONG THE SUPPLIERS

J. T. Lidbury named chairman and Sir **Sydney Camm** managing director and chief engineer of Hawker Aircraft Ltd., a Hawker Siddeley Aviation company. Lidbury, previously managing director, takes over from **Sir Roy Dobson**, vice chairman and managing director of the Hawker Siddeley Group, to allow Sir Roy to devote more time to group matters.

J. H. Famme, 25-year veteran with Convair and predecessor companies, appointed v.p.-operations of General Dynamics/Convair. He was formerly asst. division mgr.-operations. **E. R. Peterson**,

formerly with GD/Pomona, becomes v.p.-engineering of GD/Convair.

Harry Hjorth, who has been asst. chief project engineer for the DC-8 program, appointed v.p. and managing director of Douglas Aircraft Co. (Japan) Ltd.

W. T. Noll, gen. mgr. of Minneapolis-Honeywell's aeronautical division facilities in Minneapolis and Los Angeles, appointed a divisional v.p.

J. S. Alford, designing engineer at General Electric's flight propulsion division, awarded the Royal Aeronautical Society's Herbert Akroyd Memorial Prize, for his paper, "Power Plants for Supersonic Transports."

A. W. Warren transferred by General Electric from Richmond, Va., to New York, where he will be mgr. of the aircraft service shop.

Eugene L. Grindle joins Burns Aero Seat Co. as sales mgr.

James P. Brown, who has been v.p. and gen. mgr. of Lear's astronics division, appointed v.p. and corporate director of marketing. **Roy J. Benecchi**, v.p. and gen. mgr. of the former Grand Rapids division, named v.p. and asst. to the president.

Carl R. Wetterau, former president of Flight Support Inc., named asst. chief engineer of Greer Hydraulics.

David S. Williamson resigned as FAA's deputy asst. administrator for plans to become executive v.p. and a director of Aircraft Service Inc. He will set up a Washington office for the Miami-based company.

H. C. Briggs, who has been director of government relations for Collins Radio, appointed v.p. of Collins Radio International. He will be European mgr., stationed in London.

George R. Dunbar named mgr. of aviation industry sales for Westinghouse. He has been mgr. of aviation and electronic facilities at Los Angeles.

Raymond C. Brown promoted from customer service mgr. to director of product planning of Curtiss-Wright's Wright Aeronautical Div.

Harry Tobey, Vertol-Boeing's chief development engineer, named mgr. of 107 projects.

Lawrence B. Richardson Jr., former advanced projects engineer for Chance Vought, appointed director of marketing for Fairchild Aircraft and Missiles Div.

Henry M. Stewart appointed director of marketing for Air Associates.

IN THE AGENCIES

Bernard T. Robb, former operations mgr. of Airport Transport, Washington, D.C., appointed chief of the mobile lounge division at FAA's Dulles International Airport.



New 'Red Line' Speeds and TSO Extensions Mark Agency Rulemaking

While its old headline-catcher—pilot retirement at 60—was making news again, FAA quietly proposed two rulemakings last month that would have sweeping effect on the manufacturing industry as well as the carriers. Even as ALPA was filing its 11th-hour U.S. Supreme Court appeal of the pilot-age rule and Administrator Halaby was keeping the issue alive with his “review” of its justification, agency rulewriters were proposing:

- Omnibus airworthiness amendments from the 1960 and supplementary government/industry conferences that would, among other things, revise turboprop and jet operating and design speed limits and require retrofit speed warning bells, and require manufacturer landing gear fatigue evaluation. Key new speed would be a single “red line” Vmo (maximum operating) speed, set at the old “pink line” Vno (normal operation) speed and eliminating the old Vne (never exceed) speed. The bell would sound beyond Vmo plus six knots.

- A significant extension of its existing Technical Standard Order process to give FAA “more administrative control” over companies claiming the TSO stamp for their parts and equipment. The agency wants to require the manufacturer to seek TSO “authorization” and to maintain quality control which FAA could inspect at will. The agency also tacked a curious rider on the rulemaking proposal which would spell out the manufacturer’s duty to provide data to FAA’s airworthiness directive writers on any “defect in design or manufacture” on which an AWD might be needed.

Other rulemakings maintained the brisk pace of Halaby’s first 100 days, albeit with material which had its origins in E. R. Quesada’s administration:

- A mandatory 18-month distance measuring Equipment (DME) program for all large air carrier and general aviation aircraft, splitting the difference with ATA on

when DME should first be required on all airline jets. FAA would require installation on all jets by July 1, 1962; turboprops by Jan. 1, 1963; pressurized pistons by July 1, 1963 and all others by Jan. 1, 1964. ATA dates would be six months later for each category except for non-pressurized pistons it proposes to equip by Jan. 1, 1965. It would not be a go, no-go rule.

- A proposed rule making coded radar beacon transponders mandatory equipment for aircraft operating in positive control and radar advisory areas—in effect, to FAA’s experimental positive control area in the midwest.

- Mandatory terminal-area jet speed limits (61-9): The 250 knot (indicated) limit for inbound civil jets below 14,500 ft. and within 50 nautical miles of destination, a restriction which already is in effect on a voluntary basis as a safeguard against repetition of the missed holding point in the Dec. 16 New York mid-air collision.

- Other rulemaking: A special CAR, effective for a one-year period, bans in-flight use of FM portable radios in air carrier aircraft, and playing of such radios in other aircraft while omnis are being used for navigation. Continued testing is planned . . . Proposed rulemaking (61-5) would extend to non-transport category aircraft being converted from piston to turboprop the special certification technique of SR-423 to avoid the “burden-some” and “impractical” method of completely new type certification . . . Proposal 61-7 seeks to clarify qualification and proficiency requirements for first and second officers in the areas of recent takeoff and landing experience, and of “pilot-in-command” qualifications in crews with three or more pilots. . . . New Part 48 provisions (61-4) would write new restrictions on unmanned free balloon flights and non-government rocket and missile firings, and rewrite restrictions on moored balloons and kites.

VIOLATIONS

• FAA has imposed—and the pilot involved promptly appealed to CAB—a 30-day ATR suspension with which it clearly reaffirmed its intention to stay tough on pilots caught in unauthorized or over-long absences from their flight deck posts.

• In the first actual enforcement action since former Administrator E. R. Quesada’s stay-on-the-job warning after the now-famous Pan American jet “dive” over the North Atlantic, **Eastern Air Lines Capt. Curtiss Pavey Jr.** was suspended for a seven-minute absence just after takeoff from Miami International Airport. FAA said he was in the buffet area of the DC-7B passenger cabin; Capt. Pavey said in his appeal he was inspecting the main cabin door.

• In another pilot action, FAA has asked U.S. District Court prosecution in southern California against **Continental Air Lines Capt. Peter S. Anderson**, Buena Park, Calif., whom it accused of overshooting a VOR fix by 100 miles at

Amarillo on a Nov. 14, 1960 707 flight from Los Angeles to Chicago. The pilot blamed a malfunctioning course deviation indicator.

• Airline action included a \$1250 compromise fine levied against **General Airways Inc.**, a Portland, Ore., supplemental carrier, for two violations involving flight times and overweight takeoffs.

• Other violations: A \$500 fine paid by **TWA** for violation of “various provisions” of the CARs in maintenance record-keeping that failed to show who was responsible for a parts omission from a brake assembly overhaul . . . A \$500 fine against **Brannif International Airways** for leaving metal shipping caps on the collection manifold of an Electra engine for nine days after its first installation . . . A \$100 compromise penalty against **Capt. William G. Stone**, pilot-in-command of a DC-3 who failed to notice and remove the landing gear pins in pre-flight inspection Oct. 7, 1960 before a takeoff

from Eglin AFB . . . An Alaskan Airlines fine of \$1000 for assigning one of its pilots to multi-engine land aircraft without discovering he did not hold this rating . . . A \$250 fine against **Capt. Henry E. Hix**, Long Beach, U.S. **Overseas Airlines** pilot, for flying more than 115 hrs. between Jan. 31 and Feb. 29, 1960 . . . A retroactive suspension, Sept. 12-25, 1960, on **American Airlines First Officer R. G. Lang**, Bloomingdale, Ill., for raising the landing gear of his Convair 240 after touchdown at Washington National Airport last Sept. 11 . . . A \$250 fine for **Capt. Bernard N. Jarrett**, pilot-in-command of a **Zantop Air Transport C-46** which FAA said took off below minimums at Detroit Metropolitan Airport Jan. 27, 1960, because Jarrett failed to make a last-minute weather check . . . A \$100 fine for **Capt. Claude E. Grubb Jr.**, Jackson Heights, pilot-in-command of a Martin 4-0-4 which began to taxi last Oct. 30 with its passenger ramp extended and the stewardess on the ramp . . . A \$500 compromise penalty on **Currey Air Transport**, Burbank, for a series of April, 1959, DC-4 flights which ran the same four-man crew into excessive flight duty times; FAA originally proposed a \$4000 fine . . . Revocation, effective April 20, of the Part 42 certificate of **Miami Airline, Inc.**, now out of business and in bankruptcy proceedings in U.S. District Court for west Texas . . . \$100 fines each under the drinking-aboard ban from four “boisterous and noisy passengers” on a **Brannif** flight last Aug. 30 which ultimately had to expel them at an Oklahoma city intermediate stop . . . Varying fines—**Jack C. Gajewsky**, Burbank, and **Fred W. Hall**, Pacoima, \$100; **Clarence D. Lichlyter**, Buena Park, \$75; **Thomas T. Grider**, Glendale, \$50—flight crewmen involved in a series of flight time violations for which **Blatz Airlines**, Los Angeles, has paid a \$500 fine . . . \$100 fine for **Brannif Maintenance Foreman R. W. Vogl**, Farmers Branch, Texas, for destroying a form showing maintenance discrepancies from a Convair 340 pre-flight inspection . . . A \$100 fine for **Southern Airways Capt. Phillip Slayden** for a Sept. 22, 1960 violation of the left-hand approach pattern for Runway 3, Albany, Ga. . . . \$100 fine against **North Central Airlines Maintenance Man Wilfred M. Goran**, Excelsior, Minn., for improper installation of a blower actuator arm on the engine of a Convair 340 . . . A \$200 fine against **Capt. Richard H. Murray**, San Antonio, for landing his **All American Airways C-46** under a 400-ft. ceiling at Pierce, S.D., last April, when his minimum was 500 ft. . . . A \$100 fine for **Riddle Airlines Maintenance Man Curtis L. Hadley**, Hialeah, Fla., for signing off repair of an aileron hinge bracket April 4, 1960, that had not actually been checked . . . A \$100 fine on **Joseph L. Carl**, maintenance man for **ABC Aircraft & Maintenance**, El Paso, who installed a hydraulic pressure line on **Central Air Transport DC-4** which later failed, causing a “hazardous” situation on landing at Washington National . . . A \$100 fine against **Frontier Airlines** maintenance man **Harry N. Duff Jr.**, Aurora, Colorado, for failing to catch a loose nut on a fuel pump inlet line which led to an in-flight engine failure on a scheduled DC-3.



NEWS IN BRIEF

EQUIPMENT

Australia—Qantas ordered an additional fan-powered Boeing 707-120B bringing its jet fleet to 11.

London—British United Airways ordered British Aircraft Corp. VC-10s valued at \$28 million for early 1964 delivery. BOAC altered its previous order for the big jet to call for 30 Super VC-10s and 15 standard models. It had ordered 10 Super VC-10s and 35 "standard" models originally.

U.S.—Continental Airlines ordered four turbofan Boeing 720Bs at \$27.5 million for delivery in the second quarter of 1962.

Bonanza Air Lines purchased and immediately took delivery of one Fairchild F-27, making it the largest F-27 operator in the world. It has nine.

Overseas National Airways confirmed plans to lease two Canadair CL-44s for MATS contract services from Flying Tigers. **Capitol Airways** bid, but was not awarded, MATS jet charter business with a DC-8 it reportedly would have leased from Northwest Airlines.

California Airmotive Corp., Burbank, has sold a DC-4 to **Continental Deutsche Luftreedere**, West German airline. Company also will lease a 749A to **Pacific Northern Airlines** for its Seattle-Alaska scheduled passenger operations. **Trans-Texas Airways** has taken delivery of two more Convair 240s from American Airlines bringing its fleet to five. It holds options on 17 others.

Northwest Airlines sold its last seven DC-4s to The Aircraft Holding Co. of Seattle which, in turn, leased them to **Air New-Mex**, Albuquerque, for three years.

Boeing's next passenger jet will be the Model 737 grossing below 100,000 lbs. and designed for short-range operations.

MANAGEMENT

Brasilia—A realignment of Brazil's airlines, expected to be approved by President Quadros, will give Varig a 50% stock ownership of Aerovias Brasilia, formerly held by REAL. Varig assumes control of the REAL-Aerovias Brasilia international routes extending from Rio de Janeiro to Miami via Caracas and from Rio to Los Angeles and Tokyo via Bogota and Mexico City.

REAL will continue to operate between Brazil, Uruguay, Argentina and Paraguay in competition with Varig, Cruzeiro do Sul and Panair do Brasil. New president of Aerovias Brasilia is Aguiinaldo Junqueira Filho, formerly with REAL. Ruben Bordini, a Varig v.p., becomes general manager and A. R. Gate of REAL becomes traffic and sales manager. Offices move from Sao Paulo to Rio, then later to Brasilia.

Africa—General Assembly of Air-Afrique, the new airline taking over air transport activities of 11 independent states of Central Africa, was scheduled for June 25 in Abidjan (Ivory Coast). DC-4s with Air Afrique markings are beginning to appear on some Central African routes.

U.S.—Alaska Coastal Airlines and Ellis Air Lines have agreed to general plan for merger. Terms will be submitted to boards of directors "in the near future."

Merger unopposed—Shareholders of both carriers have voted approval of planned merger of Riddle Airlines and Aerovias Sud Americana. Pact now awaits only CAB approval before becoming final. CAB has given the nod to Seaboard & Western's change in name to Seaboard World Airlines.

AIRPORTS

Moscow—One of world's largest airports is under construction near Domodedovo, near Moscow. Concrete runway, now nearing completion, will accommodate Tu-104 and Tu-114 aircraft.

El Salvador—U.S. will provide \$4.25 million in loans for modernization of Ilopango International Airport at San Salvador. Airport will be enlarged to accommodate jets.

Denver—In a somewhat belated reply, this city's Mayor Batterson put the airlines on notice that he can run Stapleton Field without any help or advice from the airlines. Responding to earlier criticism by United's president W. A. Patterson, the mayor piously, but very generally, defended the city's imposition of higher landing fees.

New York—A 170-page study by the Port of N.Y. Authority into the need for a fourth major airport was handed to the governors of New York and New Jersey. It delves into the pros and cons of 17 possible sites, finally favoring the Morris County site originally backed by PNYA. The Port expects traffic to rise from 16 million passengers in 1960 to 25 million by 1965 and 45 million by 1975.

Formosa—Civil facilities at Taipei will be improved in a three-phase modernization program scheduled for this year. Military and civil operations will be separated, new hangars will be constructed and the runway will be extended to 8544 ft.

Ireland—New civil air terminal for Belfast in Northern Ireland will be built at Aldergrove. Construction will begin in the fall and is expected to be completed by spring of 1963.

Washington—Cost of Dulles International Airport by end of 1962 will be \$20 million over the \$85 million already appropriated, FAA Administrator Najeeb Halaby told the House Independent Offices Appropriations subcommittee. Cost of expansion to 1975 level of 8 million passengers may be an additional \$95 million.

FAA

Regions realigned—FAA has scrapped its numbering system for regional offices, moved back into Atlanta, after shutting down its region there in 1953, and named a few key jobholders under the revised organization.

Instead of Regions 1 through 6, the agency will designate them Eastern (N.Y.); Southern (Atlanta); Southwest (Fort Worth); Central (Kansas City); Western (Los Angeles); Alaskan (Anchorage) and Hawaiian (Honolulu).

Oscar Bakke moves to the top post in the Eastern region in the capacity of Asst. Administrator with George C. Prill taking over as director, Bureau of Flight Standards. Deputy Administrator James T. Pyle is reportedly leaving FAA on July 1 to join Lockheed.

NEW BUSINESS

Great Britain—Napier's aircraft engine business is being transferred to a new company, Napier Aero Engines Ltd., which will be owned equally by D. Napier & Son Ltd. and Rolls-Royce Ltd.

Allegheny Airlines has taken delivery of stinger-equipped Convair 540. Auxiliary power system, located in the tail of the Napier turboprop, was engineered by AiResearch Aviation Service Co.

AiResearch also is providing turn-around maintenance on TAI DC-8s used on Los Angeles-Tahiti service.



VISUAL GLIDE SLOPE lighting is shown at LaGuardia, where lights have been installed at both ends of runway 13-31. Equipment was supplied by Sylvania.

Castrol 98 is now being used by Aer Lingus on Viscounts and F-27 aircraft and by Middle East Airlines on Comets and Viscounts. The synthetic aviation gas turbine lubricant also is being used by Tradair Ltd., a charter line, on Viscounts.

\$1 million Link simulator combining Boeing 707 cockpit with electronic brain will be installed in Braniff's Operations and Maintenance Base at Dallas' Love Field.

Surinam Airways has picked reciprocating engine division of Southwest Airmotive Co., Love Field, Dallas, to be its permanent engine overhaul facility.

Continental Air Lines is buying a 707 jet trainer from Burtek, Inc. Equipment will be used for transition and refresher training.

Westinghouse Electric Corp. will supply electrical systems for Boeing 727 aircraft. Initial order calls for installations in the first 40 aircraft. Equipment includes starter-generator systems which will start the engines, then function as ac brushless generators to supply power for operation.

Riddle Airlines has retained Charles Butler Associates to design interiors of DC-7C aircraft. Aircraft will be used for charters. Butler also will provide interiors for executive, military and personal aircraft converted by Timmins Aviation, Montreal.

International Aeradio Ltd. has received a two-year renewal of a contract to supply six air traffic control officers for operation of aerodrome and approach control at Montego Bay and Palisados, and for the area control center at Kingston, Jamaica.

Plessey Co., Ltd. is completing new



NOW IT'S OFFICIAL and here's the clever presentation used by United Air Lines to announce Capital merger on June 1.

AIRLIFT Staff Photo

facilities at Romford, England, to test and develop generation systems for present and future aircraft.

MISCELLANY

Weather reporting—Weather Bureau has asked Congress for \$1.9 million for expanded aviation weather services in fiscal 1962. Funds would be used for weather services at Dulles Airport and Hawaii, for a flight assistance quality control program, and for improved weather information communication.

Communications—First automatic message center to be operated by a European airline has been opened at Brussels National Airport by SABENA. Capacity of new center is 4000 messages per hour.

Helicopters—Helicopter passenger service operated by Ansett-ANA with Bell 47J carried 1500 passengers in first month of operation. Fourteen-mile round trip (one way fare: \$3.50) is covered in less than 15 minutes. Service operates from floating heliport in downtown Melbourne.

Advertising—American Airlines has picked Doyle Dane Bernbach to take over its \$6 million advertising account from Young & Rubicam effective Aug. 15. AA cited need for "new approach" as reason.

VTOL—Douglas Aircraft, a strong contender for the Defense Department's tri-service VTOL transport development contract, has purchase rights to Doak Aircraft's ducted-fan VTOL designs.

ATC/COM—ICAO Council has adopted the British RAE visual glide path system (*AIRLIFT*, August) as a worldwide standard. It becomes effective October 1, assuming approval by ICAO member states. See photo, page 55.

New club—A new passenger club is in the making. Eastern Air Lines has decided to match its other "Big Four" members with one of its own. The first is slated to open early next year. It will be called the Falcon Club or Falcon Room depending on the final decision on membership.

Labor—Trans-Canada Air Lines is going out of the flight engineer business. In the shift to jets, its crews will be all pilots, no engineers. The DC-8 uses three, the Vanguard two.

Safes aren't safe—Robberies continue to plague small U.S. airline airports in the South. They usually close up at night and are easy prey for thieves since most are small buildings far away from the nearest house. Virtually every safe belonging to one airline at small airports has been stolen at one time or another.

Financial—Finnair (Aero O/Y) reports it completed 1960 operations with a profit of 15.6 million marks (\$49,000) carrying 517,440 passengers 6.8 million passenger miles. Over the past five years, Finnair's international traffic has climbed 114% and domestic 38.5%.

Pratt & Whitney's parent corporation, United Aircraft, spent more than \$3 million for air transportation during 1960.

V/STOL report issued. The second report to be prepared under FAA's "Project Hummingbird" program is now available from the U.S. Government Printing Office, Washington 25, D.C., for \$1.75 a copy. The new report is a technical summary of the characteristics and specifications of steep-gradient aircraft.

Add one member—VIASA, new Venezuelan international airline, has joined IATA. It is operating between South America and Europe and begins service to New York, Miami and New Orleans in June.

ELECTRONICS

Bendix Radio and Airmar Radio Service are cooperating in Doppler service station, located in Hangar 17 at Idlewild. Center will provide round-the-clock service on doppler navigation equipment.

Two **Grumman** Gulfstreams will be outfitted as airways checkers for **FAA** by **AirResearch Aviation Service Div.** Power to operate a wide range of communications and navigation equipment will be provided by **AirResearch** gas turbine installed in the tails.

Wilcox Electric Corp. is building a 42,000 sq. ft. engineering facility in Kansas City, on a site two blocks from the main plant. The new building will provide additional space for research and development.

The United States and Denmark have completed negotiations on air traffic control services over Greenland. Under the agreement, the U.S. will provide services through **USAF's Airways and Air Communications Service**.

FAA no longer is advocating restrictions on portable recording equipment on commercial flights. Frequency of oscillators used in such devices has been deemed harmless by **FAA**, **FCC** and the airline engineers.

Collins DME purchased by **Eastern Air Lines** will be installed in all of Eastern's 15 DC-8s, 12 Boeing 720s and the carrier's first group of retrofitted Electras. Eastern expects to have all jets and turboprops equipped with DME by March 1, 1962.

Canadian Aviation Electronics Ltd., Montreal; **Ferranti-Packard Electric Ltd.**, Toronto; and **de Havilland Aircraft of Canada Ltd.**, will form a subsidiary to be named **DCF Systems Ltd.**

Canadian Marconi reports an order for doppler navigation system to **MATS** for use aboard C-130E Hercules aircraft. Size of the order was not revealed.

Vega Electronics Corp. has appointed **Collins Radio's International Division** (Dallas) as its exclusive export distributor. Vega-Mike makes wireless microphone systems.

Motorola and **General Precision, Inc.** have formed a team to present a "new approach" to air traffic control communications. Proposed system provides tie-in of automatic communications with Data Processing Central.

General Precision also has established an air traffic control department located at the new corporate headquarters at Tarrytown, New York, under the direction of Craig F. Timmerman.

Bids are due at **FAA** this month on prototype flight deck conversation recorder to be built along lines suggested at Recorder Symposium held at NAFEC in March. Recorder would accommodate 30-minute repeating loop, with four tracks tied to pilot mixer, co-pilot mixer, flight engineer (or other crew member) mixer and general cockpit conversation microphone fitted with special filters to insure clarity.

MAINTENANCE/OVERHAUL



VISIrecord Provides Tighter Inventory Control for Southern

ATLANTA—Purchasing and inventory control compliment one another in Southern Airways' visible-vertical system of record keeping that has eliminated many delays in updating stock records.

Dave Cannon, Southern's director of purchasing and stores, reports the result is a closer control over inventories and a much smoother production cycle with fewer delays due to stock shortages.

The new filing system is a product of VISIrecord, Inc., Copiague, New York. Basic to the system are two filing cards—for purchasing and inventory control. These have replaced a single 4 x 6 card that had served as a traveling requisition and an inventory record. A single clerk still maintains the new file, which houses both cards, but there is no delay in adjusting the inventory history due to a traveling requisition not being returned.

Work load increased

As Southern Airways grew, it faced a need for more personnel and revision of the posting function, which was becoming too great for a single clerk. Introduction of the new system solved the problem.

Southern Airways grew from a 1929 fixed base operation, offering charter flights, instruction, sales and service, to a chartered airline which today operates 26 aircraft and serves 56 cities in eight southern states. The airline now employs about 1000 people. Its system soon will include 4160 unduplicated route miles.

The new filing system, with built-in scanning features, has slashed card location time and reduced record handling. A complete row of 23 records can be scanned in a few seconds. The present card accommodates 84 entries, double the former capacity.

Cards are housed in a mobile unit. Each file can hold records on 4500 items. Rows of 23 records are separate by main and intermediate dividers. Indexing is entered on strips

along a plastic covered channel on each main divider.

The intermediate dividers have plastic grasping tabs, progressively staggered behind indexes on the main dividers. In three seconds or less, in virtually one motion, a clerk can scan the unit, open to the proper row, and pull the desired card.

Automatic 'out' signal

Misfiling has been pared to a minimum because of an "out" signal which appears automatically when a card has been removed.

In the personnel department, a single card and one file have replaced six different sets of records in several cabinets. The personnel card serves as employment application, personnel record, pay record, termination record, seniority history and pass record.

Simple but effective card design instantly shows if an article is in order or in stock. The top right hand corner of the front of the purchase history card is green, while the top right corner of the back is red. There is a hole at the top right corner of the stock record card.

When an item is not on order, the green side of the purchase history card is forward. On return of the traveling requisition (purchase history card) from purchasing, it is replaced with the red side forward. A glance shows if the item has been ordered.

The file clerk also maintains two other VISIrecord units, P3008s with a well table. They contain records on the 1000 high-volume, low-value items, such as nuts and bolts.

Another 2000 cards are filed in two P3008 units at the Jacksonville, Fla. maintenance base. The file is used to control the flow of parts from the main maintenance base to line maintenance units.

Vertical Lathe at Tulsa Is One of AA's Largest

TULSA—American Airlines has installed a vertical turret lathe large enough to accommodate the 53-in. diameter of a turbofan engine in its turbine engine machine shop here. The 75,000-lb. "elephant" is one of the largest pieces of machine equipment installed in the Tulsa shops.

It is equipped with a 56-in. table to facilitate cutting and grinding on the fan case and other parts of AA's fan

COMPLETE ALL INFORMATION INSIDE HEAVY LINE PRINT OR TYPE ATTACH RECENT 2 X 2 PHOTO									
POSITION DESIRED Co-Pilot LOCALITY PREFERRED Atlanta									
NAME John J. Doe		TEL NO. Exchange 00000		MALE <input checked="" type="checkbox"/> FEMALE <input type="checkbox"/>		SOC SEC NO. 256-00-000		HEIGHT 6 FT 1 IN. WEIGHT 195 LBS	
ADDRESS 1000 Main Street Anytown, USA						COLOR HAIR Blond COLOR EYES Blue			
IN EMERGENCY, NOTIFY: Mrs. John Doe		RELATIONSHIP wife		TEL NO. Exchange 00000		MARRIED <input checked="" type="checkbox"/> WIDOWED <input type="checkbox"/> DIVORCED <input type="checkbox"/>		BIRTH PLACE Anytown USA BIRTH DATE 5-7-38	
SCHOOL YRS. COMPL.		NAME OF SCHOOL		ADDRESS		YEAR GRAD.		COURSES TAKEN DEGREE	
HIGH SCHOOL 4 Anytown High Sch		Anytown USA				1952 College Prep diploma			
COLLEGE 4 Anytown University		Anytown USA				1956 Bus. Admin BBA			
OTHER USAAF Flight School		Hondo, Texas				1957 Primary Flt grad			
OTHER USAAF		Greenville, Miss				1958 Basic Flt grad			
LIST HIGH SCHOOL AND/OR COLLEGE ACTIVITIES:									
Band, Football, Baseball, Track, Dramatic Club, Key Club, Variety Club									
LIST ANY PREVIOUS SERIOUS ILLNESSES, INJURIES, ACCIDENTS:									
Pneumonia (1957) Broken leg (1951 football)									
DO YOU HAVE RELATIVES WORKING FOR AA AIRWAYS INC? (YES) NO									
FROM TO EMPLOYER LOCATION POSITION SALARY REASON FOR LEAVING		U. S. CITIZEN YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>							
N/A Summer James Service Sta. Anytown, USA helper \$1.25/hr. to college									
Oal. Summer Local Airport Anytown, USA Instr. pilot \$1.00/hr. Services									
56 60 USAAF As assigned Pilot \$550 mo. Discharged									

VISIRECORD card also supplies complete personal history data on Southern employees. Single card replaces six sets of records formerly required.

engines. The lathe is anchored in specially reinforced flooring which serves also to isolate the lathe from vibrations created elsewhere in the shop.

Vertically, the lathe extends upward for 16 ft., dwarfing other equipment in its vicinity. It is equipped with a ram head to permit it to use grinding spindles already in use at the shop. It demonstrates versatility by combining turning and grinding operations previously requiring several machines.

The behemoth was purchased from the Bullard Co., Bridgeport, Conn. and installed by the Tulsa branch of the Robert Stephens Machinery Co. of St. Louis. Requirements called for mounting a precision grinding head on a 56-in. Bullard vertical turret lathe—the result was a giant-sized instrument unique in its class.

Accuracy is controllable to within two ten-thousandths of an inch. The machine is operated by push-button control. It is equipped with a Dynatrol drive which makes possible "soft-touch" operation similar to that provided in an automobile by power steering.

Price was reported as \$94,000.



AA's vertical lathe at Tulsa.

United's High Speed Wire Expedited Parts Supply

The use of high-speed communications at United Air Lines' main stores warehouse in San Francisco has greatly accelerated filling of orders for spare parts and equipment.

Orders from 80 cities are transmitted to the San Francisco warehouse by United's private line (Western Union) teletype network. Received messages are converted to tape which is fed through an IBM tape-to-card punch. The result is duplicate order cards. Up to six separate orders can be made on a single message.

A storekeeper fills the order from the cards, attaches one card to the shipment, and sends the remaining card to the accounting department for purposes of inventory.

Previously, United personnel completed orders by hand, using pre-punched filing cards. A cross file required space-consuming filing cabinets. Routine checking was slow and tedious.

United's manager of stores, Robert R. Hertzler, reports satisfaction with the new communications system which not only saves time but reduces possibility of error by eliminating necessity for "re-writing" orders.

Valve Tool Wins Award

A check for \$125 has been awarded by North Central Airlines to Lead Mechanic Gordon Torkelson for designing, on his own time, a tool which can be used to reclaim Convair valves.

Machine and tool companies previously had indicated that Convair valves could not be repaired with existing equipment because of their out-of-round characteristics. But Torkelson tackled the job regardless, and came

up with a tool which already has been put to use by North Central.

The project garnered for Torkelson one of the largest awards in the airline's Idea Dollars program: \$100 for the idea and an additional \$25 Award-of-the-Month.

NEW PRODUCTS

Steel Belt at Montreal Moves Baggage for TCA

Trans-Canada Air Lines has installed what is believed to be the first steel belt conveyor for baggage handling at Montreal's new Dorval Airport. The 73 ft.-long steel belt conveys outbound baggage to carts lined up alongside the belt and "live stores" the baggage when attendants cannot immediately transfer it into carts.

Baggage is tagged by destination and flight in the usual manner at the ticket counter, and is carried by a conventional conveyor to the steel belt conveyor in the baggage room on the floor below.

As a bag transfers to the steel belt conveyor, it breaks an electric-eye beam which starts the belt. As the bag passes beyond the beam the conveyor stops. A baggage checker records the flight, destination or next connecting point. The bag may be removed at this point and placed in the cart which will take it to its plane or it may remain on the belt. If it remains, when the next bag breaks the eye beam both bags will advance until the second bag passes beyond the beam.

Bags will continue to index forward in this manner until removed, or until one reaches the end of the conveyor, in which case it breaks another eye beam and stops the conveyor. The conveyor cannot be started until the bag is removed. This advance-and-stop arrangement enables the baggage checker to complete his records and at the same time provides an ever-ready 73 ft.-long "live storage" facility.

One or two men normally transfer the bags into the carts. In peak periods additional manpower is assigned.

Use of the steel belt permits the possible future installation of an automatic diverting system which would be controlled at the baggage checker's position. With this system, the steel belt would be the main carrying line from which baggage would be mechanically diverted at right angles onto feeder conveyors. The feeders would store baggage until such time as the baggage men were ready to transfer it to the aircraft.

The "riding surfaces" of baggage consist of many materials: plastic, metal, leather, cardboard, canvas, rope, rubber, etc. The steel carrying surface of the belt was found to be most compatible with the wide variety of baggage materials.

The conveyor was supplied by Sandvik Canadian Limited, Montreal, affiliate of Sandvik Steel, Inc., Fair Lawn, N.J. The steel belt is made from .032" thick by 24" wide strip steel, especially trued and flattened at the mill for conveyor application. Two V-ropes are bonded to the underside of the belt and these V-ropes run in grooved sheaves at the conveyor terminals to provide continuous



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TCA baggage moves by electronic control.



Willson ear protector.

true tracking. Heavier items easily slide off the Sandvik belt and do not pull it off track, as was found to be the case with other conveyor belts consistently unloaded from one side.

Liquid Quantity Gauges

Entire liquid quantity gauge systems can be tested and calibrated with a single instrument being manufactured by Consolidated Airborne Systems, Inc.—model TF-20 "Quan-Test." The instrument is servo-operated. It reduces time by enabling in-place inspection or check-out of probes, indicators and cables in capacitance-type liquid measuring systems.

A single calibration for both sensing and indicating component readings insures accuracy and speeds calibration. The TF-20 combines Conair's MD-2A probe tester with a new, integral indicator test unit. Probe capacitances from 0-5000 mmf accurate to plus or minus 0.15% of full scale are measured by a servo-actuated capacitance bridge.

A peripheral vernier, concentric with the main scale, permits direct readings to 0.05%. Resistance measurements between probe elements are determined by a 0-10,000 megohm meter, accurate to 10% of individual readings. Meter calibration is provided by built-in resistance standards.

With normal open-circuit terminal voltage of 33 v, maximum short-circuit current of the megger section is 33 ua; of the capacitance section less than 0.2 a. This provides safety from explosion hazard in fuel areas. The unit also is sealed for complete environmental protection, and guarded against shock.

Sound Barrier

Villson's #281 Sound Barrier provides over-the-ear protection against high level noise for maintenance and ramp personnel working near jet engines. They employ fluid-filled, vinyl cushions which provide a soundtight fit.

The cushions, cups, sponge pads and frame are detachable for cleaning. The units are available with earphones, microphones and other necessary communications connectors.

Cargo Expansion

A cargo container which makes use of unoccupied seats in passenger jet aircraft has been placed in operation by Pan

American on New York-London flights. Installed just prior to departure, each container exactly fills the space provided by one seat.

Pan Am presently is using four containers per flight, when seats are available, although a maximum of 12 could be used, thereby increasing cargo capacity by almost three tons. Each container holds 490 lbs. of cargo. The container itself weighs 122 lbs., and has a capacity of 48 cu. ft.

The containers previously were tested in service between Honolulu and Manila, and now are in use on both Pacific and Atlantic routes.



Expandable cargo container.

Converter

Aircraft Radio Corporation's B-19A RMI converter is a compact, light weight unit with modular construction permitting the use of only those modules required by an aircraft's omni. The B-19A makes it possible for ARC Type 15

For further information on items mentioned in Equipment World, write:
Readers' Service Dept., Airlift Magazine, 1001 Vermont Ave. N.W., Wash. 5, D.C.

omnis to give automatic RMI presentation.

With the ARC IN-16A RMI indicator (which has two independent needles for simultaneous presentations of VOR and ADF) both omni and ADF bearings can be displayed. The needles are read against a rotating card that is servoed to a stabilized heading source.

The B-19A has a self-contained 400-cycle transistorized power-supply module which is designed to operate one complete RMI display (converter, indicator and ADF loop). Weight is 7.2 lbs. The indicator weighs an additional 2.5 lbs., will fit a standard instrument panel cutout.

Emergency Radio

Douglas has developed a long-range emergency radio system capable of guiding rescuers to a downed aircraft from up to 150 miles away. The system includes a receiver, a radio transmitter which is worn by a pilot and which begins transmitting the instant he bails out, and a transmitting antenna enclosed in a buoyant, waterproof bag.

The system relies upon extreme sensitivity in the receiver and directional antennas to pinpoint emergency locations quickly. Existing airplane radio receivers can be converted to the Douglas system with little additional weight.

The receiving system is connected to a left-right meter on the pilot's instrument panel. When the needle is centered the aircraft is pointed directly toward the emergency transmitter. A sudden dip to one side indicates the aircraft is directly over the transmitter.

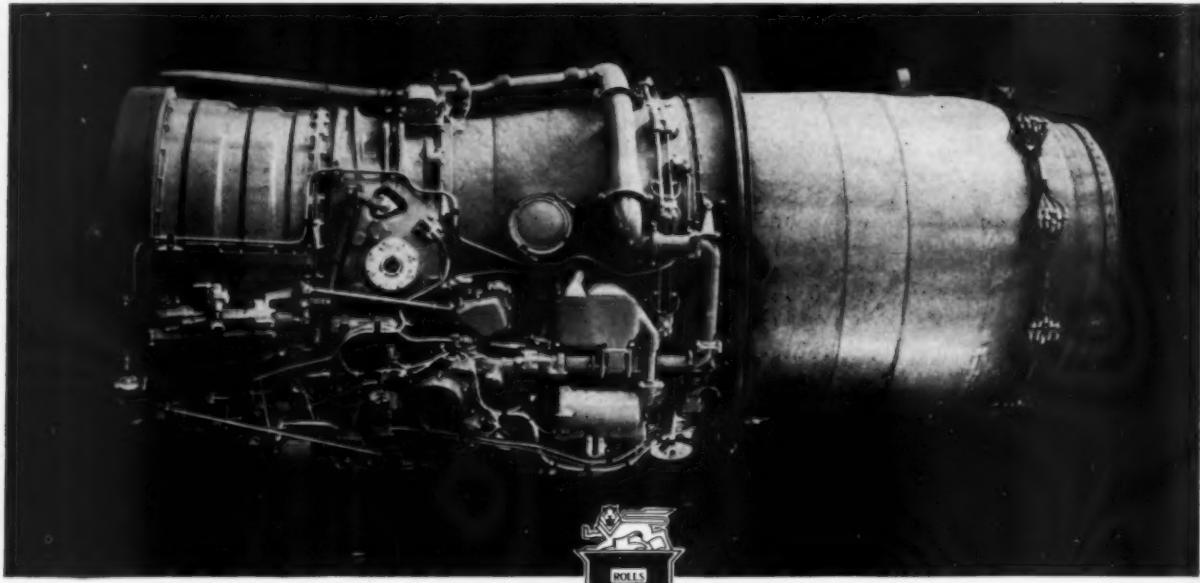
Engine Covers

Tail exhaust and fan bypass exhaust covers for turbofan jet engines are now available for the 707 and DC-8 from Thermo-Plastic Products Co. The covers snap into position, add to a list of 19 protective covers presently made by Thermo-Plastic for jet engines.

Static Inverter

The Electrosolids Corp. has announced the development of a 600 va static inverter for use in aircraft and ground support operations. The W-1605 solid state DC to AC inverter is designed for reliability under various operating extremes despite shock and within a wide temperature range.

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100	23E50/6353A-18	New
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South Africa's Race Tussle ... And Some Personal Views

You need to know this.

The entire southern end of the continent of Africa is the Union of South Africa. In size, it equals two Frances or five United Kingdoms. It is a country of diverse resources, some tropical, some highlands, some desert. At the tip is the famous Cape of Good Hope, which marks the separation of the Indian and the Atlantic oceans.

As of May 31 this year, the Union has become an independent republic, having withdrawn from the British Commonwealth of Nations. Prior to the withdrawal it was on a Commonwealth footing like Australia and Canada, but in earlier years it was closely tied in with the British colonial system. Now the Union is on its own.

There was an uneasiness in the Union last November when I was there, although my trip—including 800 miles in a rented car—couldn't have been more delightful or peaceful. But the backwash of the so-called nationalist drive of the black races in Africa—"Africa for Africans"—was clearly being felt.

Here is a country of 3 million whites, 9.6 million Bantu black natives, 1.3 million coloureds (meaning any gradation or mixture between pure black and pure white) and 450,000 Asiatics, chiefly those from India.

Who does the country belong to? If you read the newspapers and magazines at all, you are aware that the whites of South Africa intend to keep control of the country they call their own. With the Boer Dutch descendants now more powerful than the English, the Dutch, or Afrikaners, have established an apartheid race policy—the natives and the whites shall not mix. The policy is rigid and tough.

It is a sad, tragic situation, and I do not pretend to be an expert either in analysis or solution. But I do know this much from numerous trips in various parts of Africa: more bunk has been written on the nationalism aims of various African peoples than on any other subject except Communism.

All kinds of Africans

No one pattern can fit the entire continent. On the north there are Arab countries. In eastern Central Africa the whites have made great strides in developing the countries. And in the Union of South Africa there are big cities such as Johannesburg, Capetown and Durban that are as modern and developed as anything in Europe or America. The primitive Congo and the Ivory Coast are a far cry from the civilization developed in the Union.

Who was there first? When the first Dutch settlers arrived at the Cape, in 1632, there were only nomadic peoples, the Bushmen and the Hottentots, living in the southern end of Africa. Both of these nomadic groups have disappeared, except for a few in the virtually inaccessible mountains to the west of the Union.

The big issue today is the Bantu, al-



Photo by WWP.

Capetown has fine beaches at Seapoint a few miles from downtown.

most 10 million of them, who began moving south from Central Africa about the time the white Dutch were moving north. There was no contact between white and native until 130 years after the first Dutch settlement. This contact was 600 miles northeast from Capetown along the coast.

The Bantus have continued to move south and to multiply. There has never been any question about who was "first" in the Congo, or Ghana, or the Cameroons. But, except for now-vanished nomad tribes, the white Dutch were the first to occupy the southern end of Africa. The English followed in large numbers when the great diamond discoveries were made.

A good claim, but . . .

The whites have a perfect claim to the southern end of Africa. They developed a "western" civilization there. But the big issue today is not the claim of who was there first, but what to do about 9 million Bantu natives, the bulk of whom are tribal and primitive. The bald fact of the matter is that the Bantus are there and will remain there.

Not only are the Bantus there, but the white population has never hesitated to use the labor of the natives. In the earlier days the blacks were virtually enslaved, for all intents and purposes. Even today, native labor is paid low wages. Having used the natives for labor, the whites now have to assume a responsibility, or an obligation. And however you want to look at it, there are almost 10 million of them in the Union and they can't be suddenly wiped off the earth.

I would like to make an observation at the risk of getting involved in an extremely controversial and touchy subject. I have always been sympathetic to non-white races anywhere. In my mid-west school days we always had one or more Negro boys in our gangs and in school. My grandfather lived next door to a Negro family and we were all friends. I deplore any indignities heaped upon Negroes. My record on this score is beyond dispute and I could cite many instances on both the economic and social scale.

When it comes to Africa, I am appalled at the nonsense written about the urgent

necessity for turning over everything to a race that is just beginning to come out of the most primitive kind of tribal life. I am opposed to Colonialism, per se, but I see no reason why the whole world should be prodded into sweeping forward under a false guise of nationalism when so many areas are not ready for it. Back of much of this idealistic bunk is the clever, insidious backstage conspiracy of the Soviet Union, all designed to make the western white man feel that he is the lowest woe begotten rotten sinner soul on earth, an exploiter of the worst sort.

Granted that all-black countries should be masters of their own destinies, I think it is an enormously important point of history—which nobody else seems willing to say—that the black races have done so very little *on their own* through the many, many centuries. The world hasn't progressed to its present state of technology on wild music and rhythms. Nobody "gave" the white man all of the resources and techniques and discoveries he has realized through the centuries. Yet, all of a sudden, the white man is supposed to give up, to share equally, and even to turn over, those assets which have been accumulated through his own ingenuity and resources, all too often to create a vacuum for the imperialist Soviets.

In the year 500 B.C., the white man was living in crude huts or in caves in Europe. The African native was living in equally crude accommodations. The resources of Europe and Africa were equally great. Yet, in most of Africa today, the natives live as they always have lived, with the exception of what has been acquired in the way of white man's goods and know-how. It is one thing to create and invent and build. It is another just to desire to have what somebody else has, or to learn or imitate what somebody else has taught himself or learned through the ages.

I am putting in a few words what belongs in lengthy books, but I've flown over a great deal of undeveloped but basically rich African territory. With my eyes I've seen hundreds of thousands of natives. Someday they will develop into assets to the world, at least this is to be hoped. Many are making steady progress. But it will be done with the accumulated knowledge and production of the white man, who developed it himself and not through any gift from somebody else.

Someone has to give

And so, coming to the point of this article, the Union of South Africa deserves to be heard, and heard well. I do not agree personally with the full impact of the apartheid policy. The Afrikaner Dutch is a very stubborn, inflexible person, probably more so than any other white people on earth. He must "give" somewhere along the line. The Bantu must have a dignified economic place.

But the white has a claim, too, and a very valid one. He was there first, at least in much of the Union. He has a republic. He has a way of life he developed himself, although it must be said he used native labor in much of the building. I feel sorry for him in the coming struggle and I, for one, will not vote to throw him overboard regardless of his weaknesses. If my ancestors had sweated and worked and struggled to build a new homeland, I would fight for it, too, just as mine and yours fought in this place called America.

I will describe travelling in the Union next month.



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